See Page 42

Starting in this issue:

"Does Noise Affect You?"

Safety Maintenance and Production

EST. 1901 • AMERICA'S PIONEER MAGAZINE IN ITS FIELD • JUNE, 1956 • 50¢

WHAT'S SO GREAT ABOUT EYE SAVERS **SOFT VINYL FRAME** SAFETY GOGGLES?

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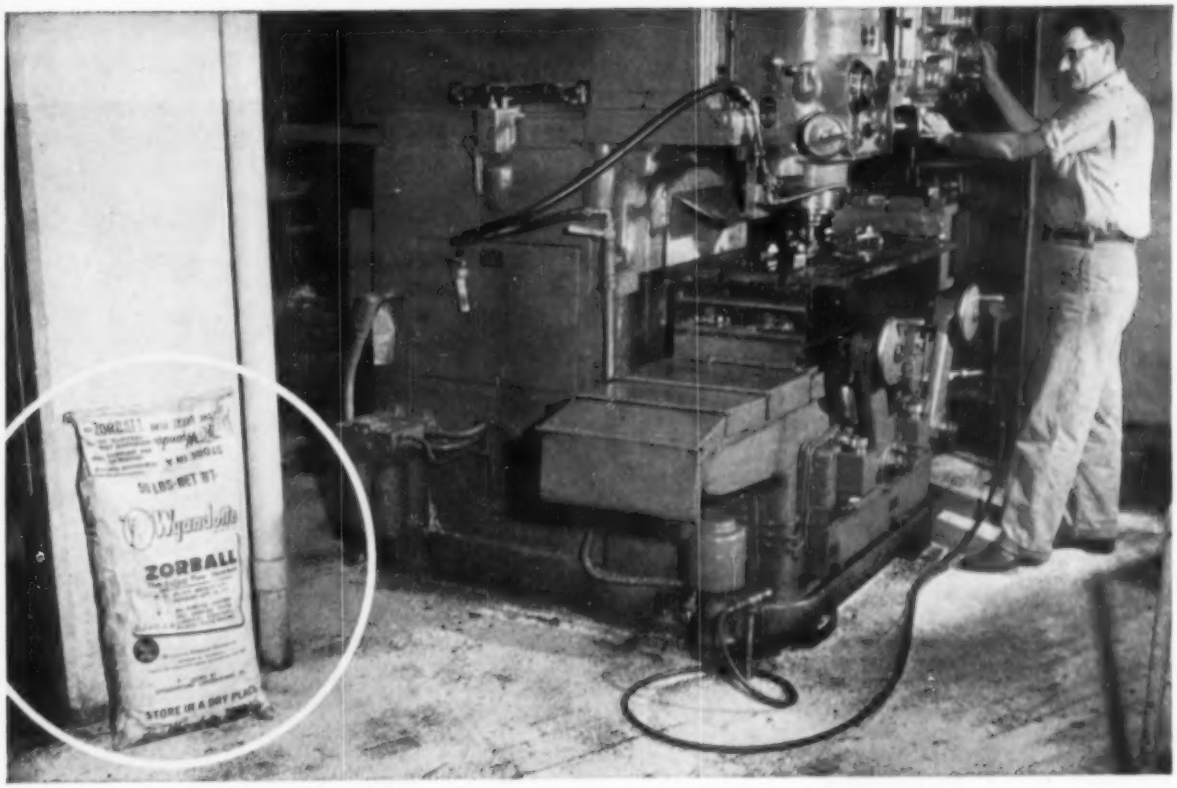
(For details, use Key # S-1 on card on page 37)



Here, where some of America's newest planes are turned out for the Armed Forces, Martin, Baltimore, uses Wyandotte ZORBALL to make their factory floors skid-free and safe.

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keeps factory floors skidproof, safe for Martin, Baltimore

In their plant operations, where powerful machines and tools are used to produce planes for the Armed Forces, the Martin Company uses Wyandotte ZORBALL as their floor absorbent for protection against slippery floors and fires caused by oily, combustible wastes.

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Wyandotte CHEMICALS

J. B. FORD DIVISION

New XP6M-1 Martin SeaMaster

(For details, use Key # S-2 on card on page 37)

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Safety Maintenance and Production

formerly "SAFETY ENGINEERING"

Volume 111, Number 6 **June, 1956**

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Cover picture by courtesy of Mine Safety Appliances Co.

AMERICA'S PIONEER MAGAZINE IN ITS FIELD

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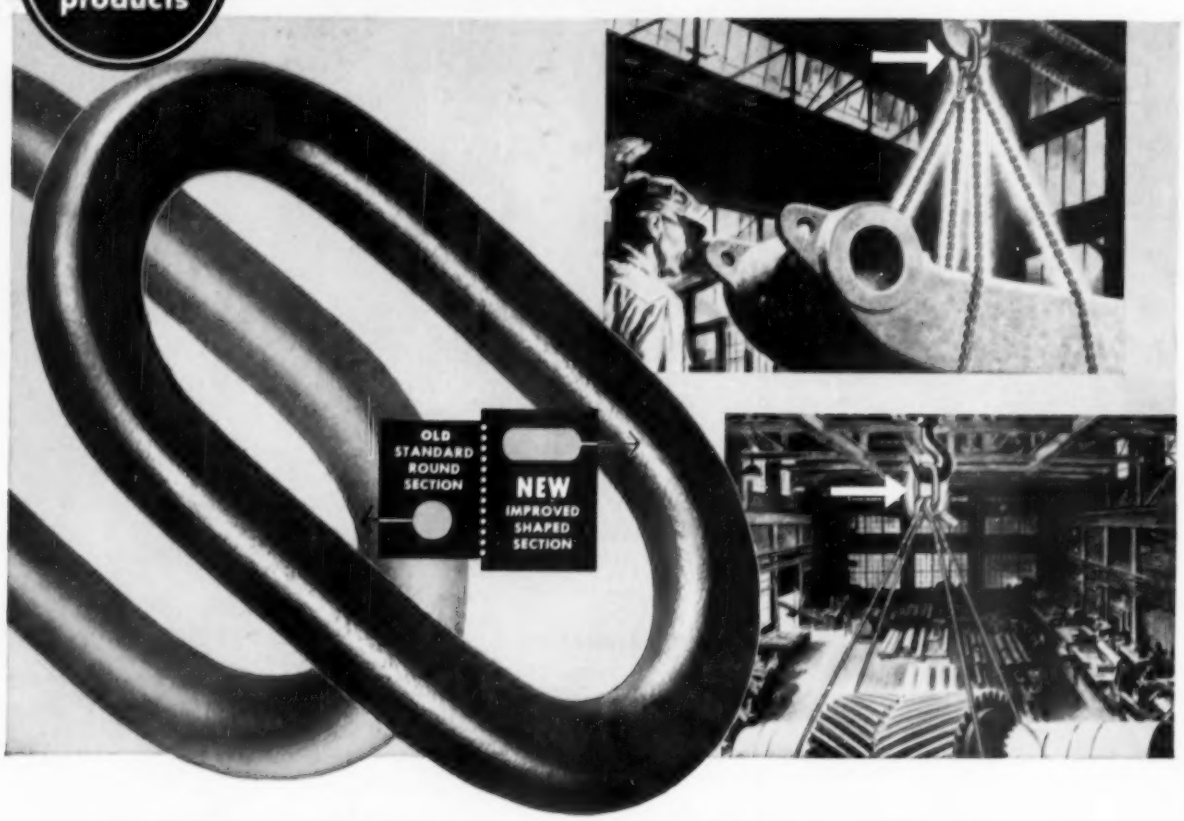

New Master Link for Slings—Either Chain or Wire Rope—Holds Its Form Under Loads Up to 18% Greater

• Latest product of the continuing research behind ACCO *Registered* Slings is this new Shaped Section Master Link. ACCO's engineers found that by shaping the link—as shown above—they could give it more "dimensional stability"—a better "section modulus." Translated into layman's English this means that the new shaped link, without any increase in weight, will withstand deformation under loads up to 18% greater than a standard round section link will.

Just as shaping a quantity of metal into a structural I-Beam allows it to handle greater loads than it could as a solid beam, so does ACCO's Shaped Section Master Link give better performance under greater loads than a link with a round section.

The new shaped link is smoother and provides a greater factor of safety. It is a better and safer link. It costs us more to make. But it will be offered on all ACCO *Registered* Slings—both wire rope and chain—at no increase in price.

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it's SAFE to say

● SAFETY VS HAZARDOUS FILM

IN THE March issue of SAFETY MAINTENANCE there appeared an illustrated article "Fire Tests on Film Storage" describing an extensive study of controlling fires by the use of storage vaults for combustible nitro-cellulose motion picture films.

Many industrial organizations have purchased or themselves have produced motion pictures which, made on now obsolete cellulose nitrate film, can result in serious explosion and fire damage to surrounding property.

One of the country's leading safety and fire prevention experts, Allen L. Cobb, Safety Director of Eastman Kodak Company, Kodak Park Works, throws enlightening information on the subject of motion picture film. According to Mr. Cobb, in a letter to this desk, no cellulose nitrate film has been made in this country by any manufacturer since early in 1951.

Moreover, Mr. Cobb reports that at the present time hazardous cellulose nitrate film has virtually disappeared from theatres and film exchanges and only a small amount of archival film is being kept.

Even this amount is being reduced rapidly in the interest of explosion and fire prevention and the archival film in our national archives in Washington is being transferred to a safety base film.

Therefore, Mr. Cobb concludes, cellulose nitrate film essentially has been eliminated as a fire hazard in this country.

Our March report dealt with material from the National Bureau of Standards and thus served to throw a spotlight on safer storage of highly dangerous film. There will appear in a later issue of SAFETY MAINTENANCE, up-to-the-minute follow-up data describing the comparative hazards of safety base and nitrate film indicating that the period of transition fortunately is over to all practical purposes.

In the meantime it is a step closer to the goal of safety that safety base film now is being manufactured exclusively in this country. Those organizations owning or storing any motion picture film would do well to explore the possibility of transferring their film to a safety base with the least possible delay.

Film explosions in the past have taken a tragic toll in lives.

● ARE SAFETY ENGINEERS NECESSARY?

IT IS often difficult for the average safety engineer to dramatize the actual number of accidents prevented through his efforts. The best he can do is to hope for a proper evaluation of his services by a comparison of accident statistics. Of course in this day of enlightened management, emphasis can be laid upon a reduction of disabling accidents and a consequent drop in frequency, severity and accident costs over a specific period of time.

Nevertheless, sickness is dramatic; health is not, and the safety director cannot very well shout about casualties prevented. If he did, chances are he would be classed as a tactless braggart and be told he is just doing the job for which he was engaged.

To demonstrate forcefully, the role of the safety director in preventing losses arising from accidents, the State of California was able to draw very definite conclusions of the value of the safety director who frequently suffers from inadequate recognition.

A recent study of injury frequencies in underground mines in California revealed in a striking manner how beneficial are the effects of safety organizations and safety programs.

To prevent disclosure of confidential information, frequencies were computed by counties, instead of by individual mines or companies.

The counties were then separated into two groups: those having mines at which full-time mine safety engineers were employed, and those in which there were no such advantages.

Injury frequencies were then computed for each group and according to the California Division of Industrial Safety, the total number of disabling underground injuries during the period studied was 786. If all the counties had records as bad as those **without** safety engineers, the injuries would have been as many as 1,000. On the other hand, if all the counties had records as good as those having safety engineers, the injuries would have dropped down to 578.

While the last figure is still much too high, it is a startling confirmation that, given even a relatively small group of employees engaged in just a reasonably hazardous undertaking, a full-time safety engineer is worth more than his salt. H.A.

Prevent Accidents

caused by

Salt Deficiency in Hot Weather

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In Canada: Parmelee, Ltd., Toronto & Montreal

(Use Key # S-5 on Inquiry Card on page 37)

Boston, Mass. *June 4–8*

Sixtieth Annual Meeting of the National Fire Protection Association (Hotel Statler). Robert W. Schuette, Mgr. Public Relations, NFPA, 60 Batterymarch St., Boston 10, Mass.

Hartford, Conn. *June 5–6*

Eleventh Annual Conference of the Connecticut Safety Society (Hotel Statler). Stephen J. Pollock, Jr., Manager, c/o Remington Arms Co., Inc., 939 Barnum Ave., Bridgeport, Conn.

Peoria, Ill. *June 6–8*

Thirty-Third Annual Midwest Safety & Fire Conference and Exhibit (Pere Marquette Hotel). Joseph F. Stech, manager, Greater Chicago Safety Council, 10 N. Clark St., Chicago 2, Ill.

York Harbor, Me. *September 13–14*

Twenty-Ninth Annual Maine State Safety Conference (Marshall House). Arthur F. Minchin, Secretary, Department of Labor & Industry, State House, Augusta, Me.

New York, N. Y. *Oct. 14–16*

First International Sanitation Maintenance Show & Conference (New York Coliseum). William S. Orkin, managing director, Orkin Exposition Management, 19 W. 44th St., New York, N. Y.

Chicago, Ill. *October 22–26*

Forty-Fourth National Safety Congress and Exposition (Conrad Hilton Hotel). R. L. Forney, Secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Columbia, S. C. *November 8–9*

Nineteenth Annual South Carolina Accident-Prevention Conference (Jefferson Hotel). J. D. Watson, Jr., Safety Engineer, South Carolina Industrial Commission, Columbia, S. C.

Atlantic City, N. J. *November 12–16*

Eighty-Fourth Annual Meeting of the American Public Health Association (Convention Hall). Information: American Public Health Association, 1790 Broadway, New York, N. Y.

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COMPLETELY Explosion-Proof!

Yes, this is the *first* industrial vacuum cleaner which combines portability, efficiency, and *complete safety*.

The MULTI-CLEAN H-500 EXPLOSION-PROOF Vac has been tested by UL and approved for use in Class I, Group D and Class 2, Group G locations.

This now means that you can use this wet-dry vac amid explosive gases, vapors, dust, and in dozens of other situations where danger of explosion or fire had previously made use of a vac too risky.

It's ideal for cleaning floors, walls, overhead pipe, machinery or stock bins where there is grease, chemicals or other flammable materials. And since it works equally well for wet or dry pickup, it's just the thing for cleaning combustible material from storage tanks.

Mills and elevators, chemical plants, petroleum refineries, gas plants, and distilleries are just a few of the locations where this new vac is especially suited.

For more information on the H-500, its powerful ⅞ hp totally enclosed motor, 100% bronze or aluminum construction, and spark-proof electrical fittings . . . see your MULTI-CLEAN Distributor or mail coupon below.

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Firm _____

Address _____

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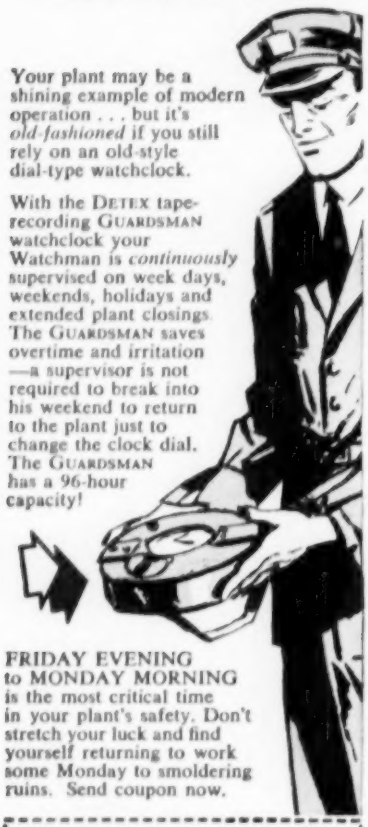
(For details, use Key # S-6 on card on page 37)

You Think She's Old Fashioned?

Look at your Watchman's Clock!

Your plant may be a shining example of modern operation . . . but it's *old-fashioned* if you still rely on an old-style dial-type watchclock.

With the DETEX tape-recording GUARDSMAN watchclock your Watchman is *continuously* supervised on week days, weekends, holidays and extended plant closings. The GUARDSMAN saves overtime and irritation —a supervisor is not required to break into his weekend to return to the plant just to change the clock dial. The GUARDSMAN has a 96-hour capacity!



FRIDAY EVENING to MONDAY MORNING is the most critical time in your plant's safety. Don't stretch your luck and find yourself returning to work some Monday to smoldering ruins. Send coupon now.

SM-6

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(Use Key # S-7 on Inquiry Card on page 37)

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992—US

976—B

2276

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(For details, use Key # S-9 on card on page 37)

Greater New York's Safety Convention

With 6,000 safety experts and accident prevention specialists in town for New York's 26th annual Safety Convention and Exposition, Mayor Wagner proclaimed the week, starting April 16th, as Greater Safety Week for New York City. The convention was held in 60 sessions at the Hotel Statler, with more than 200 speakers covering almost every field of accident prevention.

The convention and exposition were sponsored by the Greater New York Safety Council with 82 cooperating agencies, among them the Atomic Energy Commission, Army, Navy, Red Cross, Departments of the City, State and Federal governments, and industrial civic, engineering and insurance organizations.

At the Safety Exposition thousands of devices, guards and protective equipment were displayed by the nation's multi-million dollar safety equipment industry.

The ancient "coat of mail" idea was carried out with modern improvement and adaptations by dozens of manufacturers of protective apparel. There were displays of an interesting variety of safety helmets and caps, of special shoes for various industrial hazards, and safety coverings for the other parts of the body between head and feet.

Face shields varied from the "bubblehead" to the window and visor types. There were all kinds of goggles for many purposes, and goggle de-fogging devices. Gloves, from giant mitts to fine rubber skinfits, were in profusion for the handling of many types of hazards.

In the fire protection field, the displays varied from absorbent compounds to dry up oil and other flammable spillage to automatic alarm and sprinkler systems and firefighting equipment, including hand extinguishers and generating nozzles that produce anywhere from 300 to 4,500 gallons of air-foam per minute. On display were special lighting and signal lamps for fire and other emergency crews.

On view also were the latest mine safety appliances, household safety aids, machine guards, portable detectors of combustible gases, hospital staticators, driver testing devices and hundreds of other foes of accidents.

A "gadgets and gimmicks" session at which proud producers of safety ideas introduced their brain children to one another on a non-commercial basis, was a feature of the convention. This innovation was devised to enable safety ex-

perts to make available to one another ideas and devices they had created and found workable. Ralph J. Crosby, chairman of the special committee that arranged the event, said it was understood that gadgets displayed at the session were not commercial and could be freely copied and applied by visitors to the session in their own fields.

Among the several items displayed were: A mechanical man who displays the correct posture and motions for lifting heavy weights; A demonstration board showing the proper way to park a vehicle, work on a ladder, and perform certain other chores; A "mechanical book" that gives pointers on safe driving; A head protective device for insertion in a cap; An automatic warning device for stairs, repeating a message calling attention to the stair hazards; A demonstrator of the explosive quality of hydrogen gas that may come from a battery when it is on or off.

American business and production can rise to new levels this year, the 26th annual convention dinner of the Greater New York Safety Council was told by Gene Flack, sales counsel and director of advertising of Sunshine Biscuits, Inc., who made the principal address at the dinner. He said that never before in forty-one years of business experience has he seen "such confidence in the future of the American economy as exists today," declaring that "for those who take advantage of the greatest opportunities in 1956, this year will go into the record books as the greatest."

Fire Problems

There were flames and explosions, under carefully controlled conditions, at the convention's demonstration sessions. Among other spectacular demonstrations an "empty" can, in which a few drops of gasoline had remained, was exploded by W. E. Rossnagel, safety engineer of Consolidated Edison Company. Explaining how the flash point of a liquid is lowered as it vaporizes and is mixed with air, Mr. Rossnagel said that as little as one-half gallon of gasoline in an empty 8,000-gallon railroad tank car will, when it all evaporates, make an explosive mixture in the tank. He said this was why "we so frequently read of 'empty' gasoline tanks exploding." The same is true of naphtha and other volatile fluids kept in some households for cleaning or other purposes.

Mr. Rossnagel said also that insecticide guns or paint sprays should never be used in an apartment where there is an open flame, whether in fireplace or gas appliance. Warning that the spray guns would under such conditions "act like flame throwers," he said: "Liquids, when sprayed, behave as vapors and can explode with great force."

Economic factors that caused industry to pile its products higher in warehouse space have brought a need for greater automatic fire protection, the convention was told. T. Seddon Duke, president of the National Fire Protection Association, said:

"We have a new set of sprinkler rules today. The sprinkler we once knew as the standard sprinkler is now known as the 'old style' sprinkler while the spray sprinkler, around which the new rules are written, is now the standard."

He said a major change in sprinkler techniques resulted from the discovery that the old system of directing most of the water at ceilings was inefficient. The downward spray of the new sprinklers, he said, cools the products of combustion above the fire sufficiently that combustion at the ceiling will not be supported. The spray also causes less water damage than the older method.

"High piled storage of all description presents a serious problem," he said. "No one encourages warehousemen to build with higher ceilings where storage can be piled higher, but construction costs have had a great deal to do with this together with lift trucks which are used to pile storage higher and higher."

Protecting the Worker

The renaissance of the cap, the latest sartorial fad, has extended even to the field of safety "hard hats."

The 26th annual convention of the Greater New York Safety Council was told that cap-type safety headgear is crowding the traditional industrial helmet. But safety engineers prefer the full-brimmed helmet, according to Merrick Pratt, safety engineer of the California Oil Company plant at Perth Amboy, N. J.

Mr. Pratt told the body protection session, that safety headgear was used more widely in the petroleum industry than elsewhere. He said the safety helmet worn by oil drillers became a sort of industry trademark and was adopted by other types of workers in the petroleum industry.

The safety engineer recommends the hat, but actually the cap is most popular: "However, when we have a freezing rain which runs from a cap down the back of the neck, we usually convert a few more workers to hats. A variety of colors is available, each color designating a specific group. With the exception of our electricians and welders, aluminum is used. The electricians have 15,000-volt approved plastic hats and caps, and the welders a special hat designed for them of fiber."

Mr. Pratt said the safety hats and caps protect workers from many things besides falling objects. They have saved many skulls that have butted against pillars or equipment, or where men have slipped or have risen suddenly from a stooping position under an overhang.

"An example of one we missed," he said, "was a senior engineer who came up recently under a filing cabinet drawer."

The steady increase in the number of working women requires added emphasis on the safety problems of women in industry, the annual convention was told. The number of married women in the nation's labor force has gone up sharply since 1947, while there has been little change in the number of single, widowed or divorced women who work outside their homes.

Mrs. Ellen M. McAinsh, counselor for women's safety for the American Mutual Liability Insurance Company, told the convention session on "Women in Industry" that working women should avoid clothing that can bring on accidents. She said some employers were torn between requiring safety uniforms for women workers

(Continued on page 32)

In display, office accident hazards are numbered to correspond to explanatory chart at bottom of page.

Office Workers Have Accidents Too!

by **WILLIAM REEBER**
Safety Supervisor
U.S. Naval Supply Activities
Brooklyn, N. Y.

Office accidents are not attended by much fanfare or billing. They are not often very dramatic or sensational as to their cause and result. The fatality rate is negligible. More often than not, office accidents may even tend to be on the comic rather than the serious side.

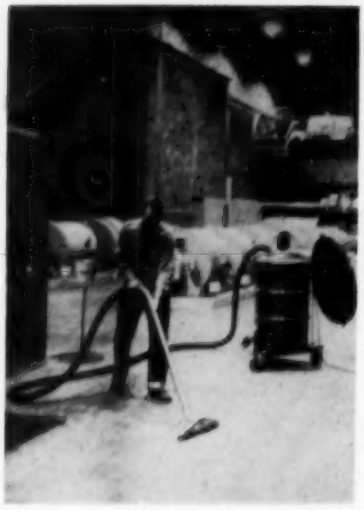
Yet, office accidents are not to be taken lightly. Office workers can be injured seriously, even if not permanently. Furthermore, Navy office accident records show that the frequency of office accidents is increasing yearly, and the resulting cost in lost time is quite sizeable. The administrative employee's work may be less tangible than that of a shop worker; but he is part of the team, and if a sprained back or ankle keeps him at home, his lost time is felt in the efficiency of the whole operation.

Ninety five percent of all office accidents could be easily avoided. They are caused by the careless act,

(Continued on page 20)

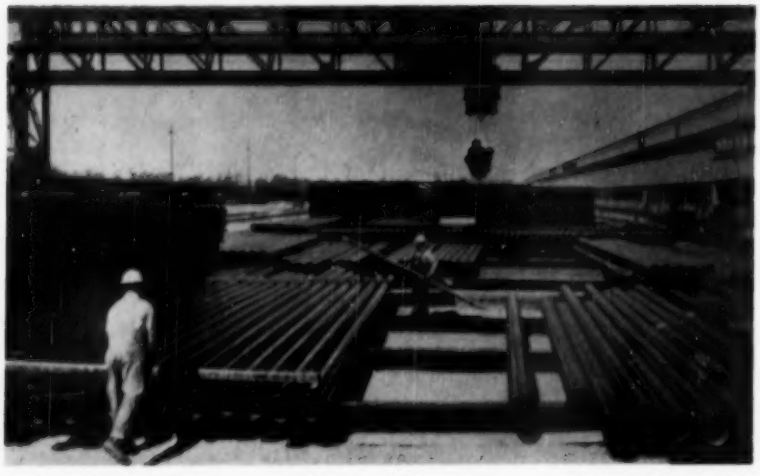
CHECK LIST OF OFFICE HAZARDS

1. Typewriter not secured to desk.
2. Desk chair with worn or broken casters.
3. Open desk drawers (tripping hazard).
4. Files not secured.
5. Heavy materials stored in top drawer (tilting hazard).
6. Open file drawers (tripping hazard).
7. Obstructions in aisle or walking area (tripping hazard).
8. Telephone cord not enclosed (tripping hazard).
9. Adding machine cord loose (tripping hazard).
10. Desk light cord frayed and loose (Don't make your own repairs!).
11. Razor blade in paper clip bowl.
12. Catching fingers in desk or file drawers.
13. Pencils in glass with points protruding (puncture wound hazard).
14. Glass desk tops with cracked or chipped edges.
15. Improper ash trays near waste basket (fire hazard).
16. Waste paper basket in aisle (tripping hazard).
17. Back of steno chair loose.
18. Sharp fasteners on file binder.
19. Scissors in desk without protection cover.
20. Splintered and rough edges on wooden furniture.
21. Throwing paper clips or shooting rubber bands (horseplay).
22. Sharp edges on filing cabinet drawers or accessories.
23. Loose fan or other overhead fixture.
24. Absentmindedness during paper cutting operations.
25. Office machine too near edge of table or desk.
26. Bookcases not uniform and unstable—no means of securing.
27. Broken office equipment.
28. Unauthorized and hazardous hot plate arrangement.
29. Protruding objects (bumping hazard).
30. YOU.



Regular use of this mobile vacuum cleaner keeps this power room spic and span.

Bear Down on the



This orderly array of pipe is another means taken to assure a better safety record.

by **JAMES E. PAYNE**

Are steelworkers better housekeepers than their wives?" Dave Edmondson repeated. "I wouldn't want to be quoted on that one. My wife would meet me at the door with a mop and a vacuum cleaner. But I'll tell you one thing—in a contest the men around here could give the women a run for their money!"

We were sitting in Dave's office after a tour through the electric weld pipe mill. It had covered miles of aisles lined with equipment turning out tons of steel pipe. I had seen literally nothing out of place—no litter, no muss to interfere with production or create a hazard for the men.

"I never had thought too much about housekeeping until I took this job as assistant labor foreman," Dave went on. "You know how it is. If a mill is neat and orderly you take it for granted, not realizing how much work goes into keeping it that way. But you'd be surprised at how the junk accumulates—coke bottles, cartons, worn-out gloves, spilled oil and paint, pieces of pipe, two-by-fours, scale, steel scrap, old bolts, rocks, empty cans—you can't let up for a minute."

"How many men does it take to keep up with it?"

"That's hard to estimate," he said, "because in a way all the men are cleanup men. But as for the cleanup crews, let's see. On Number One and Two mills we have a total of 22 men on full-time cleanup, and about 18 more who work at it part time. You take the steam cleaner, for instance. He works all over the mill cleaning away the oil and dirt. Then we have two fellows on fork lift trucks —they handle barrels of trash and

Hard Clean-Up

A glance at the spotlessness of this power room indicates the kind of care taken to keep it looking like a showplace. Such conditions reduce chances of fire, accidents.

things like that. We have two more on the dump truck, and one on the mechanical floor sweeper. Then you take a place like the inspection tables where there is always a lot of scale and scrap. We have a man on that station full time.

"We employ what we call a 'direct cleanup man.' He is assigned to a particular section of the mill. If it's a spot where the mechanical sweeper can't operate—you know, too many corners or too much machinery—he has to sweep, keep trash cleared out and take care of the scrap or scale that happens to accumulate there. Any spills he has to take care of, too, like oil or paint, or a water leak. Then on big jobs two or more men may pitch in and clean out the pits under the hydrotesters where the pipe is tested for leaks."

A variety of trash containers, in convenient locations, assist good housekeeping efforts.

"What happens to the scrap?"

"It's kept separate. The scale, which is iron oxide, goes to the blast furnace, and the steel scrap goes to the open hearth to be melted down."

"Are the other departments handled in pretty much the same way?"

"Yes. Every department is responsible for its own housekeeping, which means that each superintendent has to face the music when the inspection committee comes around. And they don't miss a thing!"

"It's a sweet system. You'll get the idea when I tell you it takes three full days for them to make the tour. And they never take the same route twice."

"Is it competitive? I mean, do you give prizes, or anything?"

"Sure, a plaque. It has 12 little bronze tablets on it, and each month the winning department gets its name engraved on a tablet. At the end of the year the department with the highest average takes the plaque for keeps."

"And what about safety," I asked.

"Ask any safety man," he replied. "He'll tell you that a clean, well-kept mill is nearly always a mill with a good safety record. He'll go on to say a neat man is a careful man. He watches what he is doing, and he has some system about the way he works. And if a mill is neat there won't be anything for a man to trip over or slip on."

"What are you smiling about?" I asked him.

"I was thinking about that housekeeping contest between steelworkers and their wives," he confessed. "I'll bet the women would learn a lot!"

By courtesy of "Steelways."

Shedding Light in Blackouts

What would happen if the employees working near high speed equipment should panic during a power failure blackout?

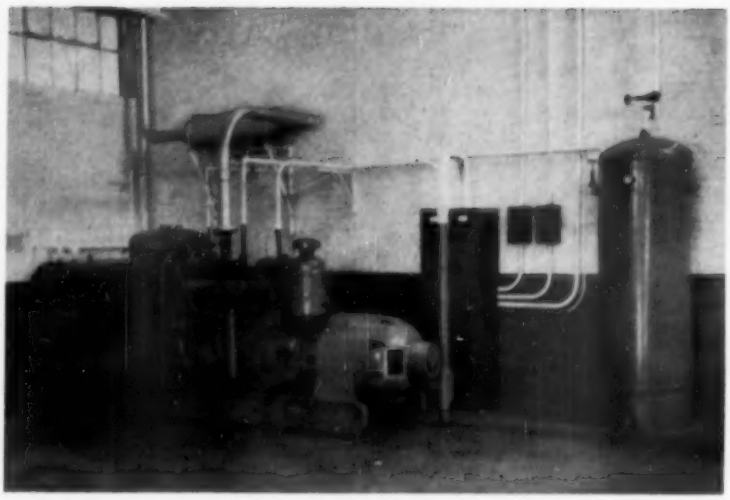
This thought occurred to one of the top officials of Shwayder Brothers, Inc., makers of Samsonite luggage, as he was standing in the Denver plant one night about three years ago when a power failure darkened the entire plant for a few minutes.

Of course, the high speed machinery would lose power during the stoppage—but a whirring circular saw blade doesn't stop immediately. "Ten seconds can make a lot of difference around high speed machinery," pointed out a Shwayder official. A person groping around in the dark could be severely injured on nearby machinery—particularly if he were hurrying to leave the building.

The result of the Shwayder official's thoughts was a plan providing for standby electric power to operate critical lights and motors during a blackout, thus eliminating the possibility of anyone getting hurt in a panic which could develop if several hundred employees found themselves plunged in darkness.

After thorough investigation, it was decided to obtain a diesel standby generator unit. Special circuits were run off of this generator for the critical lights and heating facility motors which would be necessary during a power blackout. The 220 volt, 3 phase generator provides the full 220 volts to the critical motors and 127 volts to the lighting circuits.

The engine was installed with a special automatic air starting device designed by Electric Equipment and Engineering Co. of Denver whereby the engine would be capable of automatically providing a full power load to the emergency circuit within five seconds after a power failure. The engine is preconditioned with 60° water circulating in the cooling system.



In the event of a sudden plant power failure, the above equipment automatically picks up the load on an emergency circuit which powers critically needed lights and motors.

It doesn't take a complete stoppage of all electric power into the plant to turn on the engine. It is set up so that a failure on any of seven key circuits throughout the plant will automatically start the engine and provide power to all lights and motors on the emergency circuit. These seven circuits are so wired that if one of them was completely taken out, by an explosion, the diesel could still provide power to the rest of the plant.

"The main purpose of these emergency circuits is the safety of the employee," points out Charles Bell, Shwayder Bros. power engineer. The special circuits are set up to provide light and heat in the plant where employees might be idled for some time by a power failure. No manufacturing machinery can be powered off the generator.

Floodlights on the emergency circuits are strategically located throughout the plant in any location where employees might happen to be during a blackout—in the manufacturing area, in the medical room, in halls, on stairs, in rest rooms, offices, cafeteria, and outside all plant exists. This lighting circuit is only a safeguard against a failure during the shifts operating at night. The plant has adequate natural lighting during the day. However, the heating operating off the standby unit is a precaution against failures at any time of the day.

When power is cut off, whether accidentally or purposely, the lights come on immediately. However, in the boiler room circuit, the motors

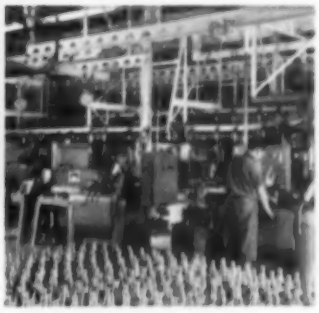
(Continued on page 25)

For a copy of booklet described on opposite page, use Key # S-10 on card on page 37.

Pittsburgh COLOR DYNAMICS®
used in new Plymouth V-8 Engine Plant

• Beams and cross braces painted the same color as ceiling improves the appearance of the intricate maze of overhead conveyors. Work areas are also made to seem more spacious.

Modern system of painting contributes to quality of production and the morale and safety of workers in Chrysler Corporation's multi-million dollar "Qualimatic" factory.



• Inspectors are assisted in their tasks by eye-rest colors on equipment used to check the alignment of crankshafts.

• Eye-rest colors are an excellent contrast for the panels of signal lights on this battery of 72 automatic "hot test stands".

ONE of the most important developments of the vast expansion program undertaken by the Chrysler Corporation is its new multi-million dollar "Qualimatic" engine plant in Detroit, Michigan. Hy-Fire 200 h.p. V-8 engines for Plymouth motorcars are produced here at the rate of 2½ per minute.

• **Walls, ceilings, floors, machines,** conveyors, motorized trucks and overhead cranes throughout this huge structure are painted according to Pittsburgh's system of COLOR DYNAMICS.

• **Exclusive automatic** quality control processes have made this plant one of the nation's industrial show places. Newly developed mechanized equipment has supplanted conventional power tools in processing, assembling, inspecting and testing.

• **Widespread use** of automated machinery has reduced physical effort. But nervous tension which affects productive efficiency remains to be coped with. This tension is often caused by eye fatigue. COLOR DYNAMICS painting helps to reduce eye strain by the proper use of eye-rest and focal colors which aid operators to see their jobs better.

• **Warning and safety colors** on machine controls, conveyors, traffic lanes, trucks and cranes alert workers and reduce danger of time-loss accidents.

• **COLOR DYNAMICS** creates a more attractive, cheerful environment for the work force which contributes to better morale. Employees take greater pride in their surroundings. They help to keep work areas clean and orderly, reducing housekeeping problems.

• **Why not test** the practical value of COLOR DYNAMICS in your plant? Try it on a machine or two—or in a whole department—and see the difference.

How to Get an Engineered Color Study of Your Plant—FREE!

• We'll be glad to mail you a free copy of our fully-illustrated book on COLOR DYNAMICS for industry. It explains simply and clearly what this painting system is and how to apply it on machines, walls, ceilings, and mobile equipment. Better still, we'll prepare an engineered color study of your plant, or any part of it, without cost or obligation. Call your nearest Pittsburgh Plate Glass Company branch and arrange to have our representative see you. Or mail coupon at right.

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CONGRATULATIONS on Your 15th Anniversary

May 1st marked the Fifteenth Anniversary of the introduction of the Series E Savings Bonds. In a deeper sense it was *your* anniversary, because you, in 1941, helped to initiate and build a thrift movement new to America—The Payroll Savings Plan for the purchase of Series E Bonds.

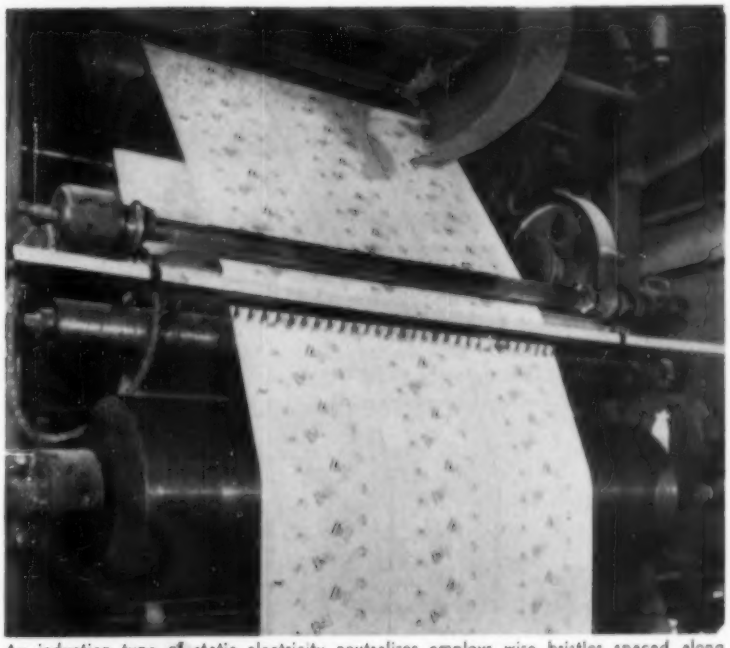
In the intervening years millions of men and women have invested billions of dollars in Series E Bonds through the Payroll Savings Plan.

Today, forty million Americans hold Series E and Series H Bonds (the H Bond was introduced in 1952) with a cash value of more than $40 billion—a reservoir of future purchasing power. In addition, Savings Bonds have paid for college educations, new homes, retirements and other family needs.

To the executives of more than 40,000 companies that have the Payroll Savings Plan . . . the 8,000,000 employed men and women who invest $160 million per month in Series E Bonds . . . the publishers of 500 business papers and the managements of radio, television and other media who give freely of their space . . . the Advertising Council . . . the advertising agencies who contribute their skills . . . to *all* of you who have had a part in the success of the Payroll Savings Plan, the United States Treasury offers its heartfelt thanks.

Secretary of the Treasury

STATIC ELECTRICITY CONTROL



An induction type of static electricity neutralizer employs wire bristles spaced along a bar and grounded to processing machine. Any quantity of static can be neutralized.

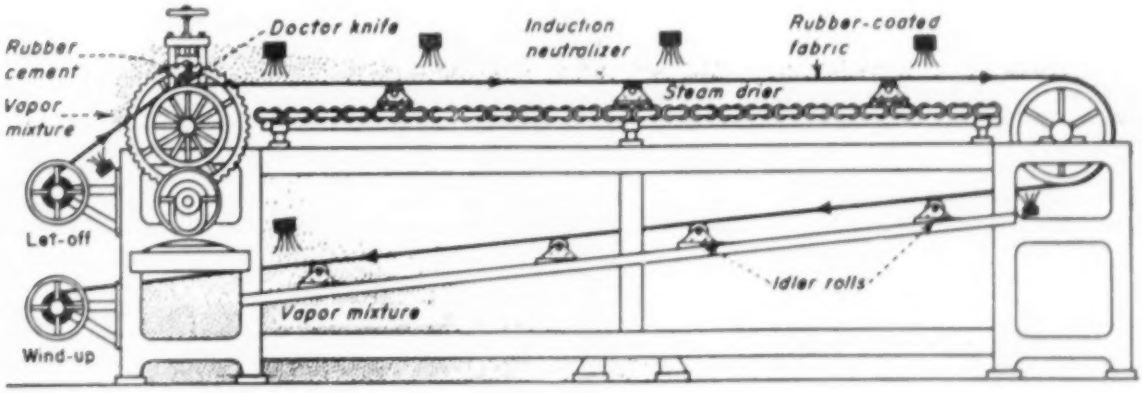
Static electricity can cause serious industrial losses in two ways: by endangering personnel and by creating fires and explosions. Electrostatic charges generated by machines or equipment will always seek a discharge path to ground, and frequently such a discharge path is presented by personnel passing by or touching the charged machines or materials. The result may be a severe shock which can inflict personal injury either directly or indirectly. As an example of indirect injury, the surprise of receiving the shock might cause the victim to fall or startle him into contact with moving or dangerous machinery.

The second danger from static electricity is that the discharging spark may ignite flammable vapors, dusts or liquids.

The generation of static charges can be considered hazardous in a variety of industrial operations: the flow and movement of flammable liquids in storage and handling; the coating, spreading or impregnating of sheet materials by machines; processing equipment that produces flammable dusts and fibres; dry cleaning and dry dyeing of fabrics; printing and lithographing work; and hospital operating room activities.

In some of these hazardous areas, static electricity can be neutralized or continuously drained away by humidification, by using relatively simple grounding devices, or by installing conductive floors and equipment and supplying personnel with conductive clothing.

One of the more difficult problems, however, is the control of static electricity generated by machinery, especially those industrial operations where continuous sheets or ribbons of material are processed, such as: calendering of rubber, plastic or paper; coating of textiles, paper or leather with rubber or plastic compounds; drying by festoon, conveyor, or vertical dryers; multi-colored printing of textiles, plastic sheeting or paper; textile weaving, brushing, rewinding and similar operations; using continuous belts for conveying or driving; passing of paper, textile, plastic, or rubber sheeting or films through heating systems or cooling



drums; slitting and bias cutting of paper, textiles, plastic and coated products; manufacture and processing of motion picture film.

Many of the attempts to drain off the static charges from these operations by means of grounding wires, copper strips, chains, tinsel, brushes, etc. have not been successful because the static electricity is trapped on insulated rollers and the moving material and is unable to flow off through the grounding device. Static electricity can only be dissipated from these operations by ionization of the air close to the electrified material. The negative ions of the static electricity charge are canceled by positive ions created by neutralizing equipment.

There are three basic types of industrial static neutralizers: high-voltage, radioactive, and induction.

High-Voltage Neutralizer

The high-voltage neutralizer applies high electric voltage to the points of needles spaced along a "live" conductor bar which stretches across the width of the moving material. The voltage is supplied by a special transformer which may be rated from 5,000 to 15,000 volts. One terminal of the high-voltage winding of the transformer connects to the conductor of the neutralizer to energize the needles; while the other terminal is connected to ground.

Although this high-voltage type requires a considerable amount of equipment, it does achieve satisfactory neutralization in some applications. High-voltage neutralizers, however, create a fixed output of neutralizing ions and therefore can neutralize only up to that fixed ion-output capacity. In actual practice, this means that, if the static electrification is very high, the neutralizer will only discharge part of it.

From the standpoint of electrical safety, the Underwriters' Laboratories, Inc. has set up standards for testing and listing approved electric neutralizers. By the very nature of the equipment, however, it is impossible to shield the needle-studded bar completely and personnel must therefore be thoroughly trained to avoid contact with the device.

The National Fire Protection Association also warns against using electric neutralizers in areas where flammable gases or vapors are present. The electrical equipment itself could cause a fire or explosion in such areas.

Radioactive Neutralizers

The radioactive neutralizers employ a radioactive material such as radium or polonium to ionize the air. Compared with high-voltage neutralizers, the radioactive type has an even lower capacity for ionization. The equipment must also be carefully installed and well shielded to prevent exposure of personnel to radiations. In many states, these installations must be approved by health officials.

Radioactive neutralizers are suitable for discharging comparatively weak electrification on materials where the space available for mounting the neutralizer is restricted and where flammable mixtures may be present.

The induction type of neutralizer employs wire bristles spaced along a bar and grounded to the processing machine. Ionization of the intervening air between the neutralizers and the electrified material occurs from the voltage induced on the grounded wire tufts by the static electricity adhering to the moving material. The wire bristles are energized only when the material is electrified, and the higher the electrification, the more the air is ionized. There is consequently no limit to the amount of static electricity that can be neutralized. Since no electrical power is required to make the neutralizer function, it is electrically safe for personnel and can also be used in industries where flammable liquids, vapors or gases may be present.

Uses Brass Wire Tufts

One particularly effective model of the induction neutralizer utilizes tufts of small-diameter brass wire spaced at intervals along a wooden bar, with the bristles located about ¼ of an inch from the moving material. Ionization of the air near the wire tips begins at charges of only a few hundred volts and even the highest charges are said to be neutralized to low, safe levels. It is especially suitable for operations where moving material becomes highly electrified by passing over or through a system of rolls, such as in the rubber and plastics industries and in high speed printing with flammable inks.*

The wooden bar with the metal tufts is installed across the width of the moving material and can be attached at each end by strap metal, brackets, angle or channel iron. Copper wires at each end of the bar are for grounding, and can be attached to the frame of the machine if the machine itself is grounded. On "ungrounded" machines, the wires can be connected with electrical grounds, water pipes, etc.

Since static electricity is generated at each roll with which the material makes substantial contact, a neutralizing bar should be located after each roll and generally 3 to 5 inches beyond the breakaway point of the material. Static charges are usually lower at points where structural members of the machine are present and the bars should therefore not be placed near, above or below tie-rods or structural members. (See drawing.)

* A source for further information about induction neutralizers can be obtained on inquiry to the Editor.

Office Workers

(from page 13)

thought, or failure to act on the part of the employee, whether the accident occurred to himself or to a co-worker.

To spotlight office dangers for our employees at the U. S. Naval Supply Activities in Brooklyn, we recently set up an Office Hazard Display, as shown in the accompanying picture. Thirty actual accident-producing hazards were pointed out by number. Many more were included but left unnumbered to encourage constructive criticism and to invite additional hazard suggestions. Further interest was sparked by the showing of a motion picture film on office hazards.

The results are encouraging. Many employees have commented that this was the first time they realized so many office hazards existed. Others have taken an inventory of the accident producing agents in their own areas and reported these hazards to their supervisors for elimination.

Steel Forms Protect Shafters, Speed Construction

Over 50 per cent in construction time alone for placing and removing forms is being saved by using steel forms in preference to conventional wooden forms in building a mine slope for the Oakmont mine at Harmar Coal Company, Barking, Pa., according to Glen Williamson, superintendent for the Williamson Shaft Contracting Company of Columbus, Ohio.

The slope, measuring 8 ft. 4 in. wide and 8 ft. high will house a belt conveyor working from a 400-ton hopper. When completed, coal will be belt-conveyed to the surface.

The steel forms are also serving as safety guards in the construction of the 765-ft. slope. Danger from roof falls, caused by loose shale overhead, posed a serious problem making it hazardous to span any appreciable depth in dynamiting down the 16 degree slope. In surveying the situation, Williamson found that the steel forms not only offered ease in maneuverability and consequent time savings, but they were also the answer to overhead protection for the workmen.

The manner in which this protection problem was solved is perhaps irregular in this type of construction. After blasting initial entry into the tunnel, 40 lineal feet of forming was set in place and a complete pour by pumpcrete machine was made. With the forms still in place, workmen shot the backwall with a 100 lb. charge. This procedure was repeated as work progressed down the slope.

This marks the first venture into the use of collapsible steel forms for Superintendent Williamson, now on his 38th project for one of the largest shaft builders in the country.

Shafters are protected from rock falls as they blast into the hillside at a mine site by a substantial steel form. The latter also cuts down costs.

After initially jetcreting the sidewalls and the arch of the shaft, a five-man crew is able to set the forms and make a complete pour of pumpcrete in 2½ eight-hour shifts. Progressing in two 20-ft. sections, a complete cycle was made in this fashion:

1. Four hours to set the reinforcing rods.

2. Four hours to strip and move ahead.

3. Eight hours to set the forms.

4. Four hours to pour 70 yds. of concrete.

The concrete is pumped into the collapsible steel forms by means of two pipe connections on the underside of the arch. There are six inspection doors, three on the arch and three on the side panels of each 20-ft. section, permitting a close observation of the pouring operation as it takes place.

The forms, consisting of side panels and arch sections, are split down the center for flexibility and an additional arch section can be added for forming tunnels of varying diameters. To set the forms the arch is raised into position by two hydraulic jacks at each end of the section. The sidewalls are moved into place by four steamboat ratchets, two on either side. Stripping is performed easily and speedily. Shifting is accomplished by a traveler moving on industrial rails.

Picture by courtesy of Steel Forms Div., Blaw-Knox Co.

It is well known that the handling of objects is the cause of most industrial accidents. Industrial lift trucks have gone a long way toward cutting this source of accidents, simply by removing the workman from direct contact with objects to be moved. Furthermore, trucks simplify the whole system of handling by moving material in quantity, thereby reducing considerably the number of opportunities for an accident to occur.

Recently The Yale & Towne Manufacturing Company's materials handling division plant in Philadelphia was given a Safety Council Award of Merit for the accomplishment of an accident frequency rate 48 percent below the average of similar industry and a severity rate 70 percent below average.

PLANT LAYOUT FACTOR: Single aisles should be 3 feet larger than biggest vehicle, two-way aisles twice width of largest truck, plus 3 feet for maneuvering.

TRUCK DESIGN FACTOR: Truck used for high stacking should have good stability, canopy guard for protection of the operator.

Four Elements of

Information Sought

We are constantly being approached by industry representatives to determine how this downward accident trend can be increased and continued through better and safer application of industrial lift trucks. We are asked how we, as a manufacturer making the maximum use of trucks in our own plant, have been able to achieve a safety record worthy of recognition.

There is certainly no secret or extra-special program back of our safety successes. All we have done is to apply stringently a three dimensional program which embodies a safe and sensible approach to the implementation of industrial trucks. The conscientious following of these principles can't help but result in safer mechanized materials handling.

The four cardinal points in achieving safe materials handling center around truck design, plant layout, operator training and protective maintenance.

There are 12 basic considerations concerning design which should be followed in the selection of a truck:

1. All structural members should be designed to carry considerable overload even though the truck is not counter-weighted for carrying the extra load. Structural members are those parts directly involved with the load such as forks, fork carriers, platforms, channels, frames and the like.

2. Adequate braking—Trucks should be able to stop within five feet while carrying a rated capacity load at top speed. When hydraulic brakes are used, trucks should have an auxiliary manually-operated mechanical braking feature.

3. Trucks should be equipped with electric horns or other audible sounding devices.

4. The design of the truck should allow for maximum visibility for the operator.

5. The steering device should respond quickly to the driver's efforts and should be free of kick backs. It should not require excessive force on the part of the operator even when the truck is moving slowly.

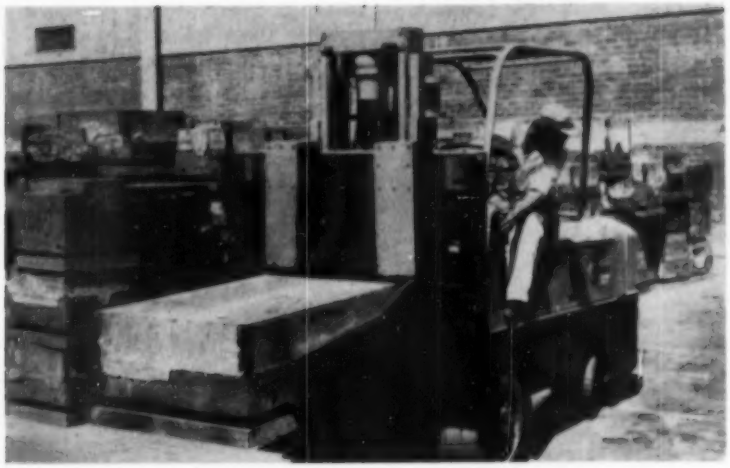
6. Trucks used for high stacking should be equipped with an operator's canopy and should have fore and aft and lateral stability.

7. Any truck used in handling loose loads should have a load back rest.

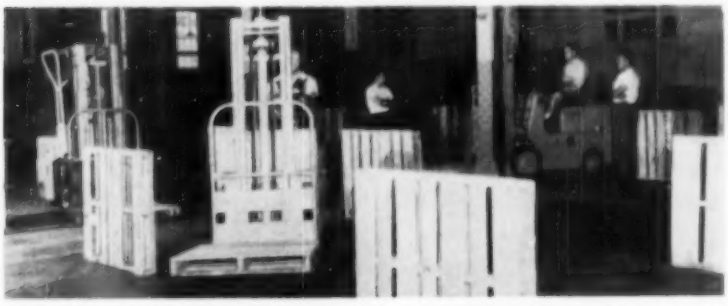
8. The operating controls should be within easy reach of the driver.

9. Trucks using hydraulic systems should be equipped with high pressure hoses, tubes and fittings.

10. The hoist cylinder should be equipped with a built-in automatic flow regulator so that if a line breaks the load will not come down faster than 30 feet per minute.



PREVENTIVE MAINTENANCE FACTOR: Trucks must be kept in dependable, safe working condition. Truck operators should have a check list for daily inspection.



OPERATOR TRAINING FACTOR: Obstacle course test for driver training helps to insure competency. A set of definite driving rules contributes to good safety record.

Lift Truck Safety

by **D. L. CHANCE**
Safety Supervisor
Yale & Towne Mfg. Co.
Materials Handling Div.

11. All hydraulic clamping devices should have a pilot operated check valve.

12. Also, clamps should be equipped with hydraulic accumulators to compensate for any loss of oil through seepage in cylinders.

There has been no attempt made to place these rules in any particular order of importance. All bear an equal weight and each one should be taken into consideration in the purchase of a truck.

The most complex problem confronting the industrial truck user is plant layout. At Yale we are fortunate in having a new plant, built in 1948 and designed along lines which automatically give us the opportunity to use our trucks to the maximum and in the most efficient manner.

Being forced to work with the physical plant as it exists, the materials handling planner must attack his problem by making the best possible use of available facilities. The key to the solution lies in an arrangement whereby rehandling of material is cut to the minimum.

The result of poor plant layout further means congestion which in turn leads to poor housekeeping, a major contributor to accidents.

Aisles in the plant should be clearly defined with appropriate markings and should be three feet wider than the largest vehicle in use. This ratio holds true in two-

1. **Truck Design**
2. **Plant Layout**
3. **Operator Training**
4. **Truck Maintenance**

way traffic as well as one. That is, twice the width of the largest vehicle plus three feet.

Good lighting is essential in expediting the flow of materials, and it certainly decreases appreciably the hazard of accidents.

Ventilation is important from the standpoint of the operator, as well as other employees, especially where gas trucks are in use. Natural ventilation and forced ventilation should both be utilized. If there is any doubt as to the permissible parts per million of carbon monoxide in the air, the services of either the plant or state Industrial Hygiene Section should be called upon.

This problem of air pollution can also be eliminated through the use of catalytic mufflers on trucks or the use of liquefied petroleum gas as a fuel.

A comprehensive operator training program, judiciously followed, is essential in the compilation of a good safety record. This program should be the result of a cooperative effort on the part of plant managers, supervision and safety personnel. Help in its establishment can also be obtained from industrial truck manufacturers.

Our training program consists of three phases:

1. Physical examination. Every truck operator must be in good physical condition and must have good vision, dexterity and coordination.

2. A written examination. Operators should be taught all the do's and don'ts of industrial truck operation and then quizzed on these points before they are permitted to drive equipment.

3. An obstacle course. After the basic driving instruction is completed, all truck operating personnel should be required to handle the equipment with precision through an obstacle course which presents every conceivable operational situation. The operator should drive this course using the truck to which he will be assigned in the plant. Assistance in the design of a course can be obtained from manufacturers.

In all methods of teaching or instruction it is wise to follow the procedure of—Tell them—Show them—Let them do it—then follow up.

After the course of instruction is completed, strict rules must be followed to assure that only the persons adjudged as qualified are allowed to operate industrial trucks.

Regardless of the size or coverage of an operator training program it is well to review constantly with operators a set of "Golden Rules" of trucking. We have worked out 13 of these for use in our plant.

The industrial truck is probably subjected to greater abuse than any other industrial machine. In spite of this fact the trucks seem to manage to stay in operation.

However, a preventive maintenance program will lengthen the life of that truck as well as improve the safety, efficiency and dependability of a materials handling program. Just what sort of maintenance program should be set up will depend on specific factors in each industry or plant, but the following considerations should be kept in mind:

1. Trucks should be inspected

13 Rules for Truck Operation

1. Don't overload—be sure you know the capacity of your truck.

2. Carry loads with forks tilted backwards.

3. Keep the load low—six to eight inches off the floor.

4. Don't elevate the load until ready for stacking.

5. Watch all clearances.

6. Know all floor and bridge weight limits.

7. Take it easy on ramps (always back down with loads).

8. Observe all traffic rules.

9. Avoid sudden stops.

10. Stay alert at all times.

11. Never travel with forks raised.

12. For better visibility with bulky loads drive backwards.

13. Watch the rear end swing.

daily by the operator using a check list to assure coverage of all points where trouble might develop.

2. The maintenance department should set up a schedule whereby each truck would be subjected to a comprehensive inspection on a weekly, monthly and annual basis.

The accomplishment of a good industrial truck safety record is nothing more than the sum total of those four major points: Choosing a truck which meets the requirements of safe design; Development of a plant layout which effectively uses those trucks; Establishment of an adequate operator training program; Inauguration of a preventive maintenance program.

Pictures by courtesy of Yale & Towne Mfg. Co.

It Sheds Light

(from page 16)

which power the fuel pumps and blowers have to be turned on manually by the fireman or electrician on duty. The reason for having them manually started is that when the man on duty is required to go to each engine and press a button to start it, then he is assured that the heating plant engines are running.

Shwayder Bros. has three boilers in its heating plant. One operates on oil and/or sawdust and the other two burn sawdust exclusively. The sawdust, which is a byproduct of the manufacturing plant, is fed to the furnaces through blowers which are wired to operate off the emergency circuit.

Other Uses

In the first two years that the standby engine had been installed, there were only three or four minor failures on the primary power source, according to Bell. None of these was of more than just a few minutes' duration.

However, the diesel engine stands as more than just insurance for a prolonged outage. Shwayder has put the engine to considerable use because of its ever expanding facilities. Expansion of the Denver plant has meant rewiring, new transforming capacities, changes in power distribution, etc. This work must be done at night after the manufacturing facilities are shut down.

The engine is turned on, the circuit shut off and the repairmen have adequate light from the emergency circuit to work. They don't have to bother with extensions or portable lighting arrangements. The emergency circuits have been hooked up to put flood lights in the transformer vaults so they can be worked on easily when the main power is off.

The only machinery which operates off the standby is in the maintenance department. Here repair tools such as drill presses, grinders, etc. are wired to the standby circuits so that repair work can be completed quickly. The motors operating the large overhead doors are also hooked into the emergency circuit in order that equipment can be moved in or out and also so employees will have a better exit from the plant should the need arise.

Pictures by courtesy of Caterpillar Tractor Co.

A SAFETY IDEA

'Round-the-World Safety Contest

Employees of Dunlop Tire and Rubber Corporation look over the new safety billboard erected in the firm's huge roadway signalling the start of a unique safety contest held in conjunction with the 3-month, state-wide safety drive sponsored by the Associated Industries of New York State. The billboard features a world map and 12 airliners, each assigned to a department in the plant. Object of the contest is a safe, 12-week around-the-world trip, and an award will be presented to the winning department. Each of the planes travels a varying number of miles per week, depending upon the relative safety of operations carried on within that department.

The various departments of the plant are divided into three groups: the red group for divisions that have had a safety record better than the plant average over the past two years; the blue group for those with an average accident experience; and the green group for those whose safety record has been below the average. If there are no lost time injuries within a department during a week, those in the red group are moved 2200 miles, the blue planes 2100 miles, and the green ones 2000 miles.

KEEPING UP WITH

Eye & Face Protection Series other articles in April and May

HEAD AND FACE SHIELD

A clear acetate visor which gives excellent frontal and side face protection against abrasive particles, flying objects and chemical splashes, has been developed by Mine Safety Appliances Company. Called the M-S-A Skullgard-Faceshield, it can be attached to any M-S-A protective hat without marring the hat and can be installed or removed in seconds. An aluminum pivot arm permits the shield to be swiveled up or down in any desired position. The visors are easily detached from the pivot arm for replacement.

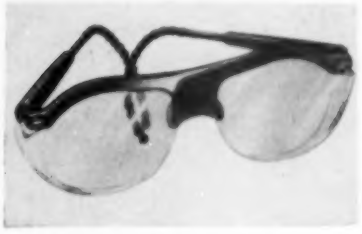
For details, use **Key # EF-1** on Inquiry Card on page 37.

INTERCHANGEABLE VISOR FACE SHIELDS

A new line of face shields with interchangeable visors to guard against flying particles and molten metals has been announced by the Glendale Optical Co., Inc. The visors, made from heavy duty acetate, can be easily and securely fastened at both sides of the headrest by means of the friction pivots provided.

The lightweight face shields consist of headrest, sweatband, adjustable head straps, and a fiber spark deflector. Visors in clear acetate are available in .020″, .030″, and .040″ thicknesses, and in light, medium, and dark green in .020″ thickness only. All are available in depths of 4″, 6″, and 8″. The face shields provide a high degree of protection in such operations as metal finishing, spot, gun and flash welding, wood working, etc.

For details, use **Key # EF-2** on Inquiry Card on page 37.



GOLD LENS SPECTACLES

Interchangeable, gold, methyl methacrylate lenses, recommended for inspection wear, have been introduced by the Watchemoket Optical Co. The gold lenses, available in Tuc-Away safety spectacle frames, are said to reduce eye fatigue and strain under close overhead lights by softening glare and absorbing nearly 100 percent of all harmful ultra-violet rays. At the same time, objects are made clearer by improving the contrast between black and white.

Made of .080 inches thick shatterproof methacrylate, the cast lenses are said to be optically perfect and to provide protection against flying particles. The lenses will resist damage from most chemicals, acid or alkaline, and will not pit from grinding or welding sparks. The spectacles are available with full side shield or full cup protection.

For details, use **Key # EF-3** on Inquiry Card on page 37.

EYE AND FACE PROTECTION

PLASTIC GUARD MATERIAL

An optically clear, rigid, thermosetting plastic, known as CR39, has been announced by the Cast Optics Corporation. The new material is said to have forty times the abrasion resistance of acrylic, and to be ideal for welder's lenses and machine guards.

The plastic offers high resistance to the pitting action of hot metallic welding sparks. According to the manufacturer, it has a life expectancy of over 1000 welding hours, when used as an outer protective lens for electric or gas welding.

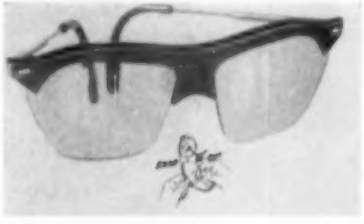
For details, use **Key # EF-4** on Inquiry Card on page 37.

PLASTIC SHIELD-GOGGLE

A lightweight plastic goggle that provides wide angle vision and an increased area of protection is announced by Pulmosan Safety Equipment Corp. Called the "Secureye Shield," the new goggle is designed to fit comfortably around the eyes, nose-bridge, upper face and temples. There are no seams or joints to obstruct vision and prescription glasses can easily be worn underneath.

Its rigid and tough construction affords full eye protection against flying particles. The transparent Lumarith lens, available in either clear or green, is rounded and sloped to deflect particles. An opaque green visor eliminates overhead glare. The exclusive foam rubber sweatband and the elastic headband are replaceable.

For details, use **Key # EF-5** on Inquiry Card on page 37.



EXECUTIVE SAFETY SPECTACLES

Interchangeable lenses, which are snapped into place without tools, permit the smartly styled frame of these new Executive Safety Spectacles to serve more than one purpose. For eye protection from impact, clear lenses are provided. For average sunlight and glare, light green lenses are available; for bright sun and extreme glare, medium green lenses. Also available, are gold lenses for increased visual acuity. All lenses are optically perfect, shatterproof Methacrylate. They are curved and oversize for extra protection, and the frame itself is curved to form-fit the forehead. One size comfortably fits any man because the "Retrax" temples slide in or out to permit each wearer to adjust his own spectacles. The "Universal" nosepiece rests lightly on the bridge of the nose without "pinch" or pressure. Each pair of spectacles has its own leatherette case large enough to hold extra sets of lenses in their individual pouches. Made by Watchemoket Optical Co., Inc.

For details, use **Key # EF-6** on Inquiry Card on page 37.

CLIP-ON COVER LENSES

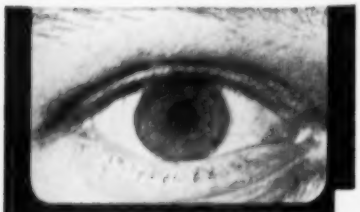
A simply designed spring clip holds welter's safety spectacles or protective shields of clear or tinted plastic. Sold under the name of KIM-CLIP, it snaps in place on all types and makes of prescription lenses. Adjustable to three definite positions (Up, Out, or Down), it is light weight, convenient, practical and inexpensive. For those who wear prescription lenses, they afford positive protection in welding and grinding operations and make ideal sun glasses for outdoor wear. Made by Kimball Safety Products Co.

For details, use **Key # EF-7** on Inquiry Card on page 37.

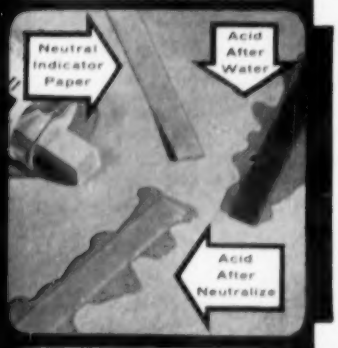
METAL SAFETY SPECTACLE

A metal safety frame designed for the recent spectacle-type safety lens shape has been developed by the U. S. Safety Service Co. Modern, clean-flowing lines, and attractive design of the metal Styl-Ize safety spectacle do not detract from the wearer's appearance, so workers willingly wear them, the

Instantly neutralizes acids or alkalies!



When acid or alkalies splash eyes or skin, Neutralize works for immediate relief and prevents severe burns. No dangerous time loss determining if chemical is acid or alkali—Neutralize counteracts both. Try this test—you can do it yourself!



NEUTRALIZE OBSOLETES WATER DILUTION TREATMENT!

Write for instructions on the Do-it-yourself test for Neutralize, or call your Bullard distributor.

EVERYTHING BULLARD IN SAFETY

Available in 4, 8 and 32 ounce polyethylene bottles

E. D. BULLARD COMPANY, 275 Eighth St., San Francisco

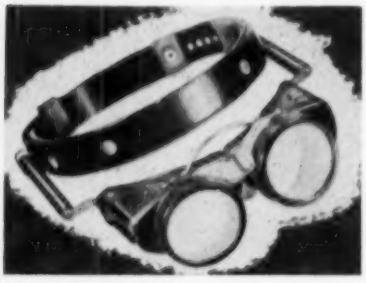
BULLARD

(Use Key # S-11 on Inquiry Card on page 37)

manufacturer claims.

The spectacles feature soft, flexible polyethylene nose pads that can be easily removed without tools and easily adjusted for greater comfort. A choice of temple styles includes: spatula type temple with plastic paddle-tips; plastic insulated cable type temples. Sideshields in metal screen, and clear or green plastic are optional. The spectacles are said to meet all federal specifications for strength, and impact and corrosion resistance.

For details, use **Key # EF-8** on Inquiry Card on page 37.



HEADREST GOGGLES

The Glendale Optical Co., Inc., has adapted their Ful-Vue GW-2 coverall goggle as a headrest goggle on telescopic arms. Mounted on an extruded plastic headgear which is impregnable to moisture and acids, and resists warping, the goggles are available in the Ful-Vue GW-500 welder's type, and the Ful-Vue GC-500 chipper's type.

The goggles are designed to fit over all prescription glasses and safety glasses. They are fully ventilated and lightly held against the face, and are available in all shades with standard 50 mm. lenses. Headgear is adjustable for a comfortable fit.

For details, use **Key # EF-9** on Inquiry Card on page 37.

SAFETY EYEWEAR FRAME

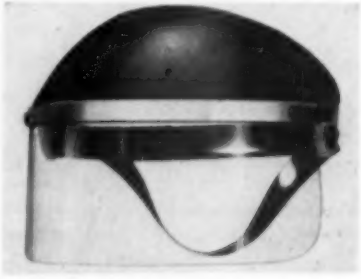
A rugged new safety eyewear frame for use by men or women workers has been developed by Bausch & Lomb Optical Co. Known as the "Titan," it is claimed to be the first combination metal-and-plastic industrial safety frame. It combines the strength of metal

with the adaptability of plastic. Safety features include: a frame of nonflammable acetate butyrate, extra tough to withstand breakage, and fully cured to hold its shape; a metal bridge, plated to resist corrosion, and held to the frame with four rivets for maximum strength; adjustable nose pads which are an integral part of the bridge. Rigid pads are also available.

The new frame features safety-cross plaques on the front temple corners which identifies them instantly as safety glasses with safety lenses. The "Titan" has a large, modern lens shape which is attractive and functional. It provides a broader horizontal field of vision and offers a better location for bifocal segments.

According to Bausch & Lomb officials, the new frame answers the demand by safety people for equipment which is attractive to workers as well as sturdy and utilitarian. They have modern ophthalmic styling, and come in a warm-toned neutral gray shade.

For details, use **Key # EF-10** on Inquiry Card on page 37.



ALL-PURPOSE FACE SHIELD

A new all-purpose face shield for protection in general shop work is announced by Chicago Eye Shield Company. This CESCO 770 Face Shield comes in three window lengths of 4", 6" and 8" measured from top to bottom. The windows mount inside an aluminum channel in a tight assembly.

A unique feature is the complete

flexibility of the entire headband. It is as flexible as the old elastic type bands but much longer-lived. There is no metal or mechanical adjustment to snag the hair. The headband of vinyl plastic is adjusted by a sliding strap. The shield conforms to the head at all points. Windows are of cellulose-acetate and may be in either green or clear.

For details, use **Key # EF-11** on Inquiry Card on page 37.

FEATHERWEIGHT GOGGLES

Workers who balk at wearing protective goggles because of their fatiguing weight are now offered a featherweight plastic goggle for

eye protection and comfort. Available from General Scientific Equipment Co. and weighing only an ounce, these new breakproof goggles may be worn throughout a full working day without causing strain to the wearer. Extremely hard-surface acetate lenses offer greater resistance to abrasion, sparks, flying chips, and spatter. They are suitable for woodworking, grinding, spot welding, and countless other jobs requiring eye protection.

Large enough to be worn over prescription glasses, goggles fit like ordinary eyeglasses but stand off farther from the face, thus allowing greater air circulation. One-piece lens offers full vision, measures 0.050 in thickness. Available in clear or medium green. Rugged plastic frame has smooth contour-molded nosepiece and brow rest. Temples made of plastic-covered cables are flexible yet strong.

For details, use **Key # EF-12** on Inquiry Card on page 37.

WIDE VISION FACE MASK

The "scottoramic" face mask manufactured by Scott Aviation, offers unusual visibility over former type masks. Said to be an entirely new concept in design, the new mask incorporates the "wrap-around windshield" idea and does away with the two separate eye-pieces.

The mask has been thoroughly tested by leading fire-fighting, industrial safety, and airline officials. In addition to unlimited visibility, the mask dispels all feeling of claustrophobia. Non-fogging is assured by the circular air-washing action of the cool air or oxygen supply. The plastic safety lens is virtually unbreakable.

Because of greatly increased side and forward vision, industrial employees can work longer with less fatigue, fire fighters perform emergency and rescue operations with greater safety and confidence, aviators are able to wear the mask even while landing aircraft, according to the manufacturer. A double lip seal makes the mask comfortable when worn for a long time . . . even over glasses. It may be donned with one hand, leaving the other free for use in emergency situations. Microphone and air hose are optional equipment.

For details, use **Key # EF-13** on Inquiry Card on page 37.

DISPOSABLE LENS STATION

Announcement is made by Pulmosan Safety Equipment Corp. of a complete, disposable anti-fogging and cleansing station for goggles, spectacles and lenses. The "Stops

FOB

EMERGENCY TREATMENT FOR BURNS

FIRST ON BURNS

A touch of the button on top of the F.O.B. container brings instant relief to painful burns from sun, fire, electricity or scalds. F.O.B. aids healing and protects against infection. It is non-toxic, non-irritating, and can be safely sprayed on any part of the body.

BURN KITS

For treatment of chemical and heat burns. Available in 3, 5 and 11 oz. spray containers. Write for laboratory test reports on F.O.B. with specifications for new Burn Kits.

E. D. BULLARD COMPANY, San Francisco, California

BULLARD

(Use Key # S-12 on Inquiry Card on page 37)

Fog" is a self-contained, unbreakable unit housing an anti-fog and lens cleaner solution, wiping tissues, and used-tissue disposal space. Stops-Fog is a single solution that cleans and stops fog in one application. When the liquid and tissues are exhausted, the unit with its wall bracket is thrown away.

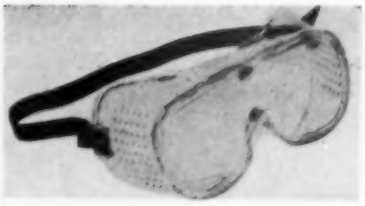
For details, use **Key # EF-14** on Inquiry Card on page 37.

FOG-PROOF EYESHIELD

A new fog-proof flexible plastic eyeshield has been introduced by the U. S. Safety Service Co. Designated the "Airflow," it features a non-corrosive nickeled 20 mesh ventilating screen more than 10" long that is integrally molded into the plastic frame. It is said that by increasing the air circulation and reducing the area of air traps, cool, fog-free ventilation is achieved. Full vision sideways and downward is an additional feature built into the frame. The pantascopic angle (lens tilting in toward the face, as in personal glasses) permits greater work area vision without moving head forward.

For workers who wear prescription glasses, even with widest frames, the eyeshield is comfortable since temple pressure is eliminated. Transmission of impacts is lessened because of an additional ⅜" space between lens of "Airflow" and spectacle lenses. Optical lens, highly resistant to pitting, is replaceable without tools. The entire unit weighs less than two ounces.

For details, use **Key # EF-15** on Inquiry Card on page 37.



SOFT-SIDED GOGGLE

An all-purpose, all-plastic goggle whose sides are extremely soft, and therefore more readily conform to the facial contours of most users, has been announced by the Wilkie Optical Co. Known as Softsides, the lightweight goggles are said to provide full vision at any angle, and greater comfort and fitting qualities. Models are available to protect against splash and chemicals, gases, and general industrial hazards. Lenses of various colors and materials from .020" to .060" thick can be ordered.

For details, use **Key # EF-16** on Inquiry Card on page 37.

Protect workers' hands from acids

NEW HOOD B-41

BUTYL GLOVES

Exclusive, non-porous butyl rubber resists strong acids . . . lessens danger of injury by absorption. Flexible, comfortable and rugged, too.

7703 NEOPRENE COATED
14½" industrial weight with natural-fit fingers.

PV-98 PLASTIC COATED
Standard weight, abrasive-resistant, liquid-proof.

R-60 "GRIP-ALL"
Coarse dust coated for handling slippery objects.

There's a HOOD Glove for every job: gauntlet, glove or mitten

HOOD RUBBER CO., Watertown, Mass.
a division of the B. F. Goodrich Company

Write for free Hood Glove Guide — shows you how to choose the RIGHT glove for EACH job.

RUBBER · NEOPRENE · PLASTIC COATED INDUSTRIAL GLOVES

(For details, use Key # S-13 on card on page 37)

Edited by HENRY M. GROSMAN
Counselor at Law, Newark, N. J.

MEMBER . . . . . Master Superior Court, New Jersey American Bar Ass'n, New Jersey Bar Ass'n, Chairman, Committee on Workmen's Compensation, New Jersey Bar Ass'n National Federation Insurance Counsel Past Commander, American Legion, Post 10, ... Newark, N. J.

FEDERAL SAFETY APPLIANCE ACT—
Coverage by Act

An independent contractor was improperly denied recovery for injuries sustained when a defective dome running board on an oil car collapsed. The lower court had ruled that the running board was not an appliance within the meaning of the Safety Appliance Act. On appeal, the court ruled that the contractor, having been upon the running board for the purpose of unloading the car, was a member of a class for whose benefit that device is a safety appliance under the statute. The court said that the violation of the statute must therefore result in absolute liability on the part of the railroad. Reversed.

SHIELDS VS. ATLANTIC COAST LINE RAILROAD CO. United States Supreme Court. No. 150—October Term, 1955 February 27, 1956. On Writ of Certiorari to the United States Court of Appeals, Fifth Circuit. Appeal from the United States District Court, Middle District of Alabama.

FEDERAL EMPLOYERS' LIABILITY ACT
—Hernia

In an action under the Federal Employers' Liability Act, a hostler's helper was properly denied recovery for a hernia where he failed to prove that his injury was caused by the negligence of the railroad. The injured employee sustained the hernia when lifting a heavy lump of frozen sand. The employee contended that the railroad was negligent in allowing the roof of the sand house to come into a state of disrepair, thus allowing rain, sleet and snow to fall into the sand house causing the sand to freeze in the cold weather. The court ruled that because the employee chose to move the big piece of sand manually instead of breaking it into smaller pieces, he could hardly impose liability on the railroad under the Federal Employers' Liability Act. Affirmed.

JACKSON VS. ILLINOIS NORTHERN RAILWAY. United States Court of Appeals, Seventh Circuit. No. 11, 246. June 15, 1955. Appeal from the United States District Court, Northern District of Illinois, Eastern Division.

FEDERAL EMPLOYERS' LIABILITY ACT
—Failure to Prove Negligence

In an action under the Federal Employers' Liability Act, a railroad car man was properly denied recovery when he failed to show negligence on the part of the railroad for a back injury sustained while cleaning motor blocks by lowering them into a cleaning vat with a crane. The court ruled that the only evidence of negligence on the part of the railroad was the testimony of the injured employee. Since the employee failed to meet the burden of proving the railroad negligent by credible evidence, the finding on that issue was necessarily against him. Affirmed.

HERRON VS. PACIFIC ELECTRIC RAILWAY CO. California District Court of Appeals, Second District, Division Two. No. 20, 863. June 28, 1955.

FEDERAL EMPLOYERS' LIABILITY ACT
—Special Findings of Jury

In an action under the Federal Employers' Liability Act, a railroad inspector was improperly granted a judgment in the amount of $18,000 for injuries sustained when a truck backed into him while he was inspecting railroad cars. A general finding that the railroad failed to furnish a safe place to work was overcome by the special findings of the jury exonerating both the railroad and the truck driver. Reversed.

PANHANDLE AND SANTA FE RAILWAY CO. VS. ARNOLD. Texas Court of Civil Appeals, Amarillo. No. 6522 October 10, 1955.

FEDERAL EMPLOYERS' LIABILITY ACT
—Failure to Prove Negligence

In an action under the Federal Employers' Liability Act, a freight conductor was properly denied recovery for injuries sustained when he was thrown to the floor of the caboose when the train made an emergency stop, where he failed to prove any negligence on the part of the railroad. The court ruled that there was a complete absence of probative facts to support the conclusion of negligence. Negligence remains the basis of liability under the Federal Employers' Liability Act. Affirmed.

HERDMAN VS. PENNSYLVANIA RAILROAD CO. United States Circuit Court of Appeals, Sixth Circuit. No. 12, 431 December 13, 1955. Appeal from the United States District Court, Southern District of Ohio.

Safety Convention

(from page 12)

and fear of female resentment of any male suggestions as to what they should wear or not wear. She suggested that women counselors for working women might ease the problem.

Wholesale hints on housekeeping of the kind that has resulted in a spectacular reduction of on-the-job accidents among the 600,000 employees of the Bell Telephone System ranged from such little things as sweeping up dropped paper clips and rubber bands to selecting the proper non-skid coatings for the 70,000,000 square feet of floor covering in the System's offices and plants.

Fred L. Burnell, Building Service engineer of the American Telephone & Telegraph Company, told the convention's session on building management that the Bell System had ten years ago an annual average of six lost time accidents per 1,000 employees. Today he said, "there is only slightly more than one such accident per 1,000 employees."

Mr. Burnell said the continuing reduction in accident rate was due to "continuing attention to safety" at all management and employee levels.

He listed dozens of housekeeping safety rules observed in all the plants of the System. Mops that have been used for floor waxing are so stored that the same mops will not be used for applying anti-slip floor finish. Carbon monoxide detectors are used in garages. Films and individual training prepare all employees in fire fighting. All building employees are trained in the proper way of lifting heavy objects without strain.

A proposal that stevedoring companies in the port of New York agree on a special designation for longshoremen who qualify as safe operators of power equipment was advanced by Gus P. Chiarello, vice-president of the Pittston Stevedoring Corporation. Declaring that power equipment used on piers, such as the fork lift, motor tractor and crane, have become highly diversified and are continually undergoing changes of design, Mr. Chiarello described a plan put into effect by his firm to reduce personal injury and damage to cargo and equipment.

"While it is quite difficult to be sure of the continuous employment of mechanical operators," he said, "we have been identifying these employees by issuance of identification cards of a different color from the cards issued to longshoremen employed by our company. This special card is issued to the qualified driver after a conference between the tractor driver foreman and the pier superintendent, as well as the head foreman in charge of the actual operation. After these men agree on the driver's ability, the head timekeeper is instructed to issue the special 'driver' card and recall the 'longshore' company card. Should other firms in our industry adopt this system, I believe

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. . . for paint spray, gases, dusts, fumes, smoke. They hug your face so securely that hazardous outside elements cannot reach your eyes. Fog is removed from lenses by an easy nod or shake of the head. The few drops of water placed on the inner wall of the lens do the trick. Yes, they can be worn with any respirator. Sample, $2.00 postpaid.
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(For details, use Key # S-14 on card on page 37)

it could be possible for us to honor each other's 'operator' cards when employing these men."

Greater employee interest and cooperation in safety programs can in some cases be obtained by holding safety meetings for small groups, Stanley M. Richards, overhead line superintendent of the Long Island Lighting Company, told the public utilities session. He said that all linemen received thorough job training in safety as soon as they were hired. After that, he said, regular safety meetings were held to keep them alert to hazards of all kinds.

"In previous years," said Mr. Richards, "a monthly crew meeting was held in each operating area with all personnel of the overhead line section present. Subjects ranged from safe driving to seasonal hazards, with the area supervisor conducting the meeting. Films were shown. Accidents were discussed. The latter part of the meeting was devoted to a general discussion, where questions were answered.

Another Approach Used

"Last December, because of inattention at time, employees' reluctance to ask questions in front of a large group, and a feeling that if foremen conducted their own meetings a more personal relationship would be developed, we discontinued these large meetings and instituted another approach. Our crew safety meetings are now held twice a month by individual foremen and their crews. Each foreman gives his crew a 20-minute safety talk. The smaller groups are less formal and audience participation is increased. By doing this, the foreman and crew are united against accidents."

"This safety business is more of a state of mind than it is anything else," Mark Flaherty, personnel director of the Park Sheraton Hotel told the convention. He cited his hotel's record of reducing its annual toll of lost-time accidents by more than 90 percent over the past five years.

"Five years ago," said Mr. Flaherty, "the Park Sheraton was at the bottom of the safety heap, wallowing in accidents, paying the highest of compensation rates until finally our compensation carrier told us to look elsewhere for our insurance. At this sad point, Ralph Freeman came to the Park Sheraton (as manager) and with him came the ideas and strength for a good sound employee relations program, having at its base the welfare of the employees."

In 1950, said Mr. Flaherty, the hotel had 210 reportable accidents; in 1951 it had 111; in 1952 there were 57; 1953 had 27; 1954 had 23; and in 1955 the figure was down to 13. He said this was achieved by putting "heart" and "conscience" into all employee relations so that workers identified their interests, including safety habits, with the success of the hotel. He said safety committees were employee-conducted, on the employees' own time but with annual awards of hotel stock as rewards for safety improvement.

A feeling that construction contractors are less concerned with safety than most other types of employers is held by some safety engineers, it was disclosed by John

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P. French, construction safety engineer of Lumbermen's Mutual Casualty Company. He said he did not agree wholly with that opinion but admitted that the construction industry's attitude towards accident prevention needed improvement.

"The problem seems to be," said Mr. French, "that we have not yet found the one approach to the accident prevention problem which will convince contractors that safety is necessary to operate competitively."

Mr. French said it was apparent that safety engineers had not yet put across the idea to the construction industry "that accident frequency can well be a line parallel to job efficiency if the two were graphed together on a progress chart."

He used a series of "before and after" films to show how pre-planning and methods engineering had improved on ways of doing various construction jobs. In each case, he said, the improved method, involving fewer steps of materials handling, resulted in greater job efficiency and at the same time reduced accident hazards.

"I have yet to see," he declared, "any construction operation, seriously scrutinized from an accident prevention standpoint, which did not produce some improvement either in the operation itself or in the efficiency of the operation. Time and again we find that an operation which presents accident hazards also contains operation inefficiencies and need for improvement in methods.

"Generally, by giving thought to eliminating the hazards in an operation, we discover that the hazards themselves constitute a major part of the inefficiencies and need for improvement in methods."

Noting that some contractors maintain that construction work is entirely different from manufacturing or other industries and their own experience on specific jobs the best criterion of work methods, Mr. French said:

"No matter what your opinion is of safety engineers, remember this! Your best and most experienced superintendent will probably work on no more than fifty large projects from start to finish in his lifetime. I manage to visit approximately one thousand projects a year. Something worthwhile should rub off from these many exposures to construction operations."

The American paper and pulp industry made its accident reduction record public as an example of what small companies can do to increase on-the-job safety. The presentation was made by George V. Johnson, secretary of the industrial relations committee of the American Paper and Pulp Association.

Noting that the American paper includes mills employing several thousands of employees and many having fewer than 100 workers, Mr. Johnson said the bulk of its operations was in plants with 250 to 300 employees.

"Safety was not always of principal concern to the paper and pulp industry," he said. "Several attempts to effectuate a program were made on a cooperative basis, the principal one being the organization of a Joint Safety Committee in 1948. These efforts were salutary in bringing to the fore safety consciousness but were not really doing a job."

New Code

In April of 1953, he said, the American Paper and Pulp Association began a new safety drive, with a subcommittee of industry men interested in safety. It charted and analyzed all accidents of the previous year, computed their cost, instituted vision testing and other specific safety aids and co-sponsored with the National Safety Council a safety code for the industry. In 1946, he said, the paper industry's accident frequency was 26.9, compared to 19.9 for all manufacturing. By 1952, he said, the paper industry was down to 14.3, while that for all industry had gone down to 13.5; but by 1954 the paper industry frequency was down to 11.6, which was below the average for all industry.

The convention went into night session to enable shop foremen and plant supervisors who are busy on the job throughout the metropolitan area by day to get some practical lessons in industrial accident prevention.

The importance of job hazard analysis was stressed at one of the convention's night sessions by Donald W. Lyon, general foreman in the power transformer department of the General Electric Company plant at Pittsfield, Mass.

After telling how the foreman discusses the findings of the job hazard analysis with each employee under his supervision, and how this is followed up by inspections, Mr. Lyon said:

"This is extremely important in that it makes the operator aware of the hazards connected with his job, and the action he must take to guard against injury. The analysis form is in duplicate. After the interview, the operator is given one copy, and the other is filed in his record folder. This establishes a personal responsibility."

He said that bringing the men into the office in groups, along with their union stewards, to explain the accident prevention program, the supervisors got them to "realize that they were the ones to be most benefited by cooperating in the plan."

The danger of carbon monoxide poisoning from leaks in gas distribution has been lessening with the substitution of natural for manufactured gas in many areas, according to Albert F. Cascioli, a chemical engineer for the Consolidated Edison Company. He warned, however, that exhaust gases, especially from automobiles and other internal combustion engines and the breakdown of electrical insulations still produced carbon monoxide in deadly amounts.

"Carbon monoxide was our chief concern for toxic hazards," he said, "because it has no odor and is dangerous in low concentration. With the advent of natural gas, this problem is being gradually minimized in so far as its presence in distribution gases is concerned. Nevertheless detection should be made available for those confined areas until such time as its presence will demand attention only in specific cases."

After describing various instruments and detection procedures used by utilities, Mr. Cascioli said:

"When one recalls to mind some of the old methods of testing atmospheres, such as the lowering of dogs in baskets and waiting for

(Continued on page 39)

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(pages 2 and 3)

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from the CARELESS ACTS of others the WISE MAN corrects his own
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As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. To obtain copies write in the key numbers on the free-postage card below.

MISCELLANEOUS

Floor Maintenance Machines **567**
American Floor Surfacing Machine Co. A line of floor maintenance machines is described in this illustrated brochure, giving the various models available, with features and specifications of each. Information includes attachments that are available for sanding, polishing, scrubbing, grinding, etc.

Tree-Trimming Equipment **568**
Bartlett Mfg. Co. 32-page booklet, fully illustrated, features a line of tree-trimming equipment, including tree climbers, pole saws, ladders, etc. Specifications and recommendations for use are given.

Punch Press Guard **569**
Seerjeant Metal Products, Inc. Illustrated bulletin describes a two-hand, electro-solenoid control attachment that employs the principle of a solenoid for presses up to 25 ton capacity, and an air cylinder for larger presses, to pull down the clutch lever. The unit comes completely wired, ready for installation.

Solenoid Valves **570**
Athomatic Valve Co., Inc. Description of a complete line of electrically-operated, two-way solenoid valves for air, gas, steam and liquid flow control is given in this illustrated brochure. Also contains specifications and applications of the valves, along with coil and flow charts, and other useful information.

Marine Safety Tools **571**
The Beryllium Corp. A marine kit of safety tools that are corrosion and spark resistant, as well as non-magnetic, is shown in this illustrated bulletin. The tools are packaged in a vinyl plastic pouch, and can be permanently and safely stored in corrosive atmospheres.

HYGIENE

Poison Ivy Formula **572**
E. D. Bullard Co. Illustrated bulletin describes a spot test given to prove the preventive and analgesic qualities of a compound for poison ivy, oak, and sumac. Photographs of treated and untreated areas of infection emphasize the effectiveness of the formula.

Skin Creams and Cleansers **573**
The Chemical Corp. A 4-page brochure describing a complete line of skin protective creams, waterless cleansers, and work lotions. Fully illustrated, it offers information on the uses and qualities of the various creams and cleansers.

SIGNS & SIGNALS

Visual & Audible Signals **574**
Federal Sign & Signal Corp. A comprehensive, illustrated booklet on the proper selection and use of visual and audible signals in industrial application. Encompasses the factors in selection, and details the purpose of various types of signals available.

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Signal Horn **575**
Falcon Alarm Co., Inc. The uses and specifications of a line of portable, self-powered signal horns are described in this 4-page, illustrated pamphlet. Accessories such as over-sized horns, and larger-sized, refillable cylinders are also featured.

Signs **576**
Stonehouse Signs, Inc. Fully illustrated, colored booklet describes a full line of industrial accident prevention signs. Available signs are pictured, and prices and specifications for each are given.

Automatic Emergency Lights **577**
Electric Cord Co. Detailed in this illustrated brochure is a line of automatic emergency lights. Recommendations for use, as well as specifications, are given for the different models available, including units for sign illumination, hand units, and units for use in hazardous locations.

PERSONAL PROTECTION

Work Clothes **578**
Workon, Inc. A 16-page, illustrated catalog detailing a complete line of lint-free, acid- and caustic-resistant work clothes, including coveralls, shirts, pants, etc. Also contains laboratory reports on the technical properties of the synthetic fabrics from which the clothes are made.

Terry Cloth Gloves **579**
Jomac, Inc. A line of heat-resistant terry cloth gloves, pads, and sleeves are described in this fully-illustrated, 8-page catalog. Information includes a brief description of the various steps taken in the manufacture of the protective coverings, as well as the cloth itself.

Protective Clothing **580**
The Milburn Co. Informative brochure on a complete line of protective clothing made from acid-resistant materials, heat-resistant materials, etc. A wide variety of items are described, including coveralls, aprons, sleeves, hoods, mittens, etc.

MATERIALS HANDLING

Wire Rope Slings **581**
Macwhyte Co. Safe loads for a line of wire rope slings of various sizes are listed in this illustrated brochure. Information covers slings varying from ½-ton safe load to 48.7-tons safe load.

Wire Rope **582**
American Chain & Cable Co., Inc., American Cable Div. Covering more than 120 different types of industrial wire rope, this illustrated, 24-page booklet offers recommendations concerning their uses, and details such points as rope diameters, construction, preforming, etc. In addition, charts on weights and breaking strengths are provided, along with other useful information.

(Continued next page)

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Woven Wire Products **583**
The Cambridge Wire Cloth Co. This first issue of a 4-page illustrated quarterly covers the latest applications and developments of a line of woven wire products, including conveyor belts, cloth, and special fabrications. This issue also contains a discussion of the advantages and disadvantages of the types of spirals used in weaving wire belts.

Drum Handling Equipment **584**
Morse Mfg. Co. Illustrated, 4-page folder describes a complete line of manual and motorized drum handling equipment, including drum cradles, lifting hooks, hand trucks and tipping levers. In addition, a portable rotator for drums weighing up to 500 lbs. is featured.

Dock Bumpers **585**
Bumpers, Inc. A specification sheet detailing design and installation information on a series of dock bumpers. Drawings provided illustrate the various models available, as well as the methods for mounting the bumpers.

Portable Lifts **586**
The Oster Mfg. Co. A bulletin on the proper application of a line of portable lifts, with photographs of the equipment handling such diversified loads as skid bins, crated goods, dies, etc. Also described are the different types of lifting mechanisms available.

Gravity Roller Conveyors **587**
Harry J. Ferguson Co. A 20-page booklet describing a line of gravity roller conveyors. Fully illustrated, and in color, the booklet contains information on the applications and specifications of the various models available.

NOISE CONTROL

The Industrial Noise Problem **588**
Mine Safety Appliances Co. A 16-page booklet, in question-and-answer form, that answers some of the more pertinent questions regarding the problem of industrial noise and its effect on hearing. Also included is an illustrated description of a series of hearing protective devices.

What's YOUR Problem?

- **Has an accident or fire interrupted production?**
- **Want to know how to prevent it?**
- **Do you need background information on equipment for industrial safety, hygiene, or maintenance?**

As a service to its readers, "Safety Maintenance" will arrange to supply manufacturers literature on the following subjects. Just insert the key number on the Readers Inquiry Card on the preceding page and be sure to fill in your name and address. If you need information on a specific type of product, simply write it in on the Inquiry Card.

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102	Face Shields
103	Lens Cleaning & Anti-Fogging Equipment
104	Sweat Band
105	Hard Hats
106	Respirators & Masks
107	Protective Clothing
108	Women's Protection Clothing
109	Safety Belts
110	Safety Gloves
111	Foot Protection
112	Anti-Slip Soles
113	Oil-Proof Soles
114	Welding Helmets
115	Welding Curtains
	FIRST AID AND PERSONAL HYGIENE
120	Protective Skin Cream
121	Skin Cleansers
122	Sanitary Drinking Facilities
123	Athlete's Foot Control
124	Salt Tablets
125	Noise Analysis & Control
126	Antiseptic Medication
127	Burn Medication
128	First Aid Kits & Supplies
129	Stretchers & Litters
130	Resuscitators
131	Eye Wash Fountains
132	Hand Drying Equipmsnt
	DUST & FUME CONTROL
135	Portable Ventilator
136	Dust & Fume Collectors
137	Carbon Monoxide Control
	FIRE PROTECTION
140	Fire Extinguishers
141	Safety Cans
142	Fire Trucks

Key Number	Subject
143	Safer Solvents
144	Degreasing Machines
145	Flammable Liquid Pumps
146	Fire Blankets
147	Fire Retardants
148	Watchmen's Control Systems
149	Fire Alarms
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150	Alarms & Warning Lights
151	Explosion-Proof Lights
152	Electrical Insulation Tester
153	Fluorescent Lamp Guards
154	Emergency Lights
	MAINTENANCE
160	Anti-Slip Floor & Mats
161	Anti-Slip Waxes & Finishes
162	Floor Cleaning Compounds
163	Cleaning Machines
164	Oil & Grease Absorbents
165	Paints
166	Floor Resurfacing Materials
	LADDERS & HANDLING
170	Ladders & Safety Devices
171	Scaffolds
172	Work Platforms
173	Slings
	GUARDS
175	Machine Guards
176	Power Press Feeders
177	Overload Guards
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WHAT'S YOUR PROBLEM?

them to howl to indicate a poor atmosphere or the carrying of birds or lighted candles to indicate dangerous atmosphere, it can be seen that in this day we are equipped with much safer, more expedient and more available tools."

A hospital official said that too many accidents occur in hospitals and are never reported. R. A. Hooper, assistant director of Long Island College Hospital, Brooklyn, suggested tighter controls by hospital administrators would lead to a reduction of such accidents.

"Patients are constantly falling from bed," he said, "slipping in tubs and showers, sliding from wheelchairs and walkers, toppling over going to or from or in toilets, wandering disoriented and doing an almost unlimited number of hazardous or potentially hazardous things. So, too, are visitors, special duty nurses, and even attending doctors.

"It would seem that practically none of the untoward incidents which occur in most hospitals are ever reported above the charge nurse level, and that relatively few reach even that high unless a fairly serious injury results."

Mr. Hooper said that an insistence at Long Island College Hospital on better reporting had "increased management's knowledge of these incidents by a factor of ten, possibly more." He said this made it possible to correct some unsafe conditions and practices. Within two months of the start of better reporting, he said, a different type of side rail was ordered, bathtub and shower fittings were changed, and more stringent controls of ambulatory patients were instituted.

Nowhere near enough effort is made to reduce accidents in the home, which killed 30,000 Americans yast year, Mrs. Jean Wade Rindlaub, a vice-president of Batten, Barton, Durstine & Osborn, Inc., told the convention.

The advertising executive said industry should realize much of its lost production came from absenteeism caused by off-job accidents, either to employees or members of their families. She said industry had a financial stake in reducing home accidents. She suggested that industrial companies conduct publicity and educational drives.

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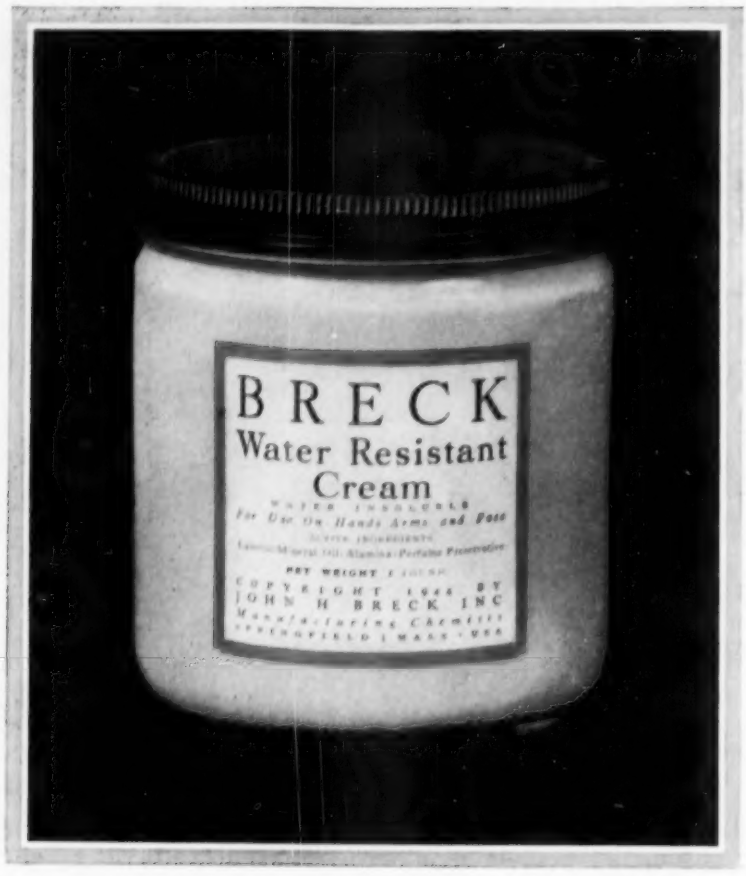

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Authorities Stress Cleanliness for Safety & Health

Soap as a "germ chaser" in industry as well as at home, and as an important factor in general well-being, is the running theme of a recent publication containing some 200 statements about the importance of soap-and-water cleanliness. They come from leading health, medical, and government, business, and other authorities.

The booklet, "Soap Is Essential To Health, Welfare, And Morale," is published by the Cleanliness Bureau of the Association of American Soap & Glycerine Producers. It is intended as a reference source useful in health programs, personnel training, plant management and maintenance, food handling, and in preparing educational manuals.

The areas where soap-and-water cleanliness is useful are classified in nine sections: Health, Germ Chasing, Atomic and Biological Warfare, First Aid, Skin Diseases, Food Handling, Comfort and Morale, Personal Cleanliness and Good Grooming, and Good Business.

In the section headed "Cleanliness Is Good Business," scientists, physicians, and industrial supervisors urge the meticulous practice of cleanliness in industry, bringing out three major points. First, products turned out under sanitary conditions, whether foodstuffs or not, are better products. Second, a clean working environment is called basic to good labor-management relations and respect for the worker as an individual. Third, consumers demand assurance that what they buy comes from sanitary plants. Obviously scrupulous habit patterns of cleanliness help to curb employee absenteeism by building up health conservation in industry.

The last page of the booklet deals with what is perhaps the best known quote on the subject, "Cleanliness is next to Godliness," generally attributed to John Wesley, and offers evidence that he may not have been the first to make the comparison. Francis Bacon said it almost 100 years earlier, and it is also found in early religious writings.

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Noise Abatement Symposium

A record attendance is expected this year at the National Noise Abatement Symposium—a conference devoted to the discussion of noise problems and acoustical developments. To accommodate the increased attendance, the seventh annual symposium will be held Oct. 11 and 12 at the Hotel Sherman in Chicago's Loop instead of the campus of Illinois Institute of Technology, the site of previous meetings.

Growing concern over noise has prompted conference officials to expect more than the usual attendance of 300 scientists, engineers, architects, manufacturers, physicians, and civic authorities.

This year's symposium program will consist of four half-day sessions, according to conference chairman Guy J. Sanders, associate physicist at Armour Research Foundation of Illinois Institute of Technology.

The opening day sessions will deal with the elimination and reduction of machinery noises and the control of noise through architectural design.

The two sessions on Oct. 12 will consider the most effective means of reducing the effects of noise on people, and transportation noises and their effects on urban residents.

Symposium co-sponsors with Armour Research Foundation are Acoustical Society of America, Council on Industrial Health, American Society of Safety Engineers, National Noise Abatement Council, American Society of Planning Officials, American Industrial Hygiene Association, and Acoustical Materials Association.

Does noise affect you and your work?

by **LAYMON N. MILLER**
Bolt Beranek and Newman Inc.
Consultants in Acoustics
Cambridge, Massachusetts

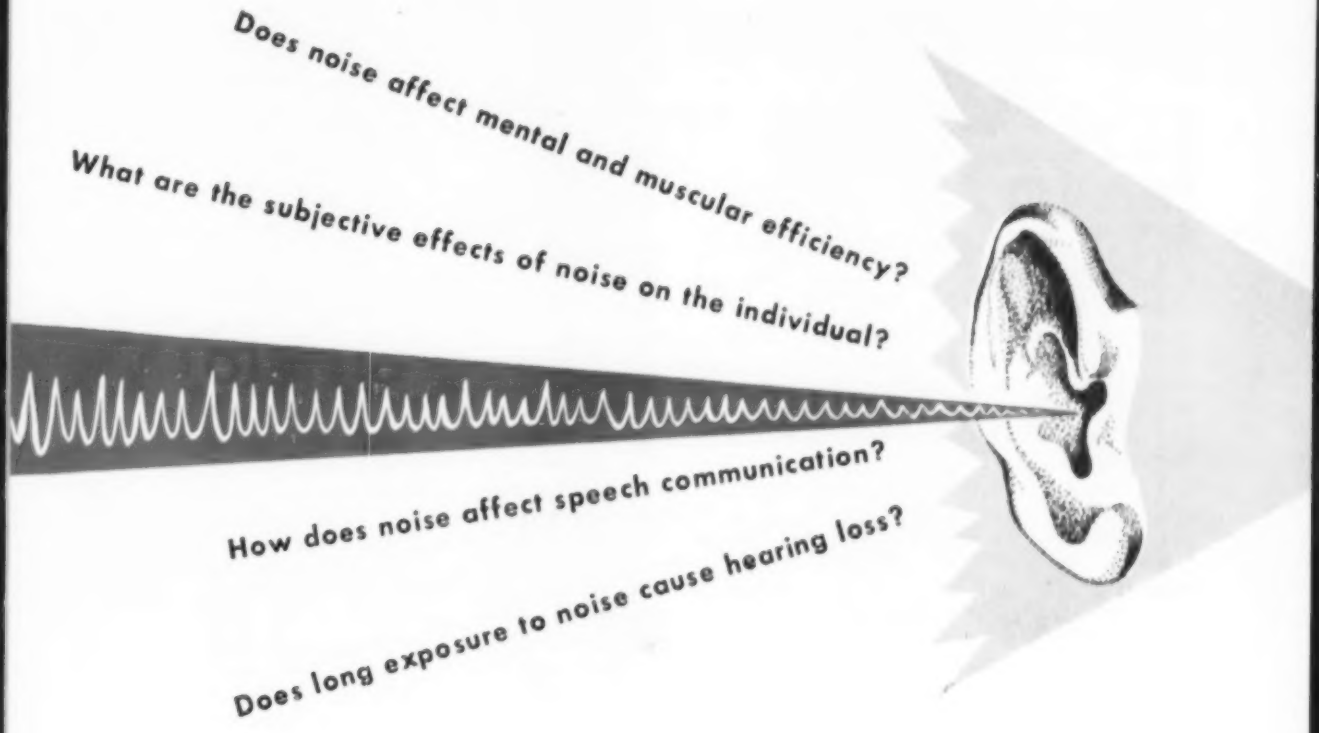
Editorial Note: This is the first installment of an article on noise control in industry. In this issue various effects of noise on man are reviewed. In later installments, recommended amounts of noise reduction will be given for specific industrial situations, and several means for achieving noise control will be presented and discussed.

There is a frequently quoted study of the influence of noise on worker efficiency which dates back to several years ago. In this study a large company compared the efficiency and general performance of a staff of office workers for one year before and one year after the installation of sound absorption material on the walls and ceilings of their offices. The overall noise level reduction in the offices due to the sound absorption treatment was only approximately 6 db, but the results claimed for the sound treatment were quite remarkable in the improved performance observed for the personnel. For example, it was indicated that calculating machine operators' errors were reduced 52%, typists' errors were reduced 29%, health was improved 37%, and employee turnover was reduced 47%.

No doubt you would be willing to have that kind of improved performance for a few thousand square feet of acoustical tile in your office or plant, but before you place your order we might learn what happened the following year at that particular company. Apparently the company was so astounded with the results that they decided to reverse the procedure to see if their personnel efficiency data would revert to the original performance figures. So they covered up the sound absorbing material with a non-absorbing cover and began collecting performance data again. They found a temporary relapse in performance, but after a relatively short adjustment period, overall personnel efficiency was back up to the high level of the previous year's "quiet" treatment. However, it isn't indicated whether during the first two-year data-taking period the employees may have improved their efficiency through learning and experience, or that ill or unskilled employees may have changed jobs, or that other factors such as lighting, ventilation, improved supervision, or morale building employee relationships may have influenced employee performance during the period.

Perhaps the most significant contribution of this study and a number of other early relatively inconclusive studies on the psychological or physiological effects of noise on people was the fact that they helped to stimulate interest in this field of study. In some cases this interest was aroused by the startling conclusions that were sometimes reached.

In the literature of the period 1928 to 1938,[1] there are reported a large number of interesting and ingenious experiments which were designed to study


Does noise affect mental and muscular efficiency?
What are the subjective effects of noise on the individual?
How does noise affect speech communication?
Does long exposure to noise cause hearing loss?

the effect of noise on the mental and muscular activity of a large number of subjects. One experimenter measured the oxygen consumption of typists at work while a variety of discordant noises were presented intermittently during the tests. Several experimenters measured the time required to perform arithmetic problems in the absence and presence of noise. One group tested motor skills with a peg board in the presence of different noise environments. The findings of these various tests may be summarized as follows:

1. In either mental or motor tests, noise may have a slightly adverse effect at first, but it rapidly wears off as the subject becomes accommodated to the noise environment.

2. Intermittent loud noises and "soft" music were sometimes more disturbing than continuous loud noises, indicating that the disturbance is not due to loudness alone.

3. Noises rated by the subjects as most annoying were not always shown to have the most adverse effects on the tests.

4. Noises rated by the subjects as very irritating did not necessarily reduce the efficiency of performance of the test.

During World War II, a number of controlled tests were carried out in simulated war-time noise environments. One of the most thorough of these tests [2, 3] involved exposure of the subjects to continuous long-time noise levels corresponding to those found in the cabin of a typical bombing plane. The tests included studies of a large number of basic body or muscular manipulations (1) in the presence of the simulated aircraft noise, and (2) in a much lower noise level environment. Muscular tension in the arms and legs, metabolism rate, breathing rate, rate of change of focus of the eyes between near objects and distant objects, speed with which the eye could be moved through a known angle, ability to stand erect without swaying, steadiness of the hand, and adaptation of the eyes to darkness were taken as representative of the types of body or muscular activity which might be influenced by noise. The measured data for these functions showed no particular relation between the function and the presence or absence of noise. Frequently, the range of variation of a particular function in a given subject under normal conditions was larger than the variation which might be attributed to the effects of noise.

In another group of tests,[2, 3] the subjects carried out, under noisy and quiet conditions, specific operations which represented various combinations of mental and muscular effort. For example, the subjects were required to adjust, by means of airplane controls, the position of the spot on a cathode-ray oscilloscope and the position of a pointer on a direction meter. In other tests they were required to press a button with the proper hand or foot depending upon which one of four lights flashed on a panel in front of them; to follow with a pointer a small spot on the edge of a rotating speeded-up phonograph turntable; to sort a stack of 12 kinds of cards into 12 compartments; to translate written material into a code; and to judge

distance with the use of one eye. In all of these tests it was found that performance was not affected by the presence of noise. However, the subjects, in filling out daily questionnaires, did indicate a uniform preference for the quiet days and generally reported a feeling of greater fatigue when working in noise.

Another war-time experiment [4] involved controlled exposures to noise during prolonged periods of azimuth tracking and range finding with a gun-fire control device. Some of the tests actually revealed short periods of improved performance accompanying noise bursts which followed long periods of tracking in monotonous quiet.

Another study [5] involved the quality of work output by men working in hot spaces under different noise conditions. The study revealed that noise did not affect the work, but high noise levels produced feelings of irritability and unpleasantness on the part of the workers.

The general conclusions which seem to follow from all of these studies of man and noise are as follows:

1. Noise does not appear to affect significantly the mental or motor skills of individuals. In the performance of simple tasks, action becomes automatic and is not adversely influenced by noise. In the performance of difficult tasks, action is concentrated on the task and the noise is ignored.

2. With prolonged exposure to noise, individuals become adapted to the noise environment. Short-term changes in the noise environment require short periods of readjustment and frequently produce short-time improvements in performance because of the break in an otherwise monotonous environment.

3. High noise levels give rise to feelings of annoyance and irritability, and possibly fatigue. The noise levels involved in the above findings were not high enough to be considered damaging to hearing during the short time exposures of the tests. Further, the tests involved in these studies were not concerned with any aspects of speech communication in the presence of noise. The influence of noise on annoyance, speech communication, and possible hearing damage are considered separately in the following sections.

Annoyance of Noise

We are annoyed by a person honking his horn as soon as the traffic light turns green: are we annoyed by the noise or by his show of impatience? We are annoyed by an airplane flying low over our home: are we annoyed by the noise or by the fear of impending danger? We are annoyed by a nearby person eating popcorn during a dramatic part of a movie, but we accept popcorn eating at the circus: are we annoyed by the noise or by the inappropriateness of the occasion? Noise may represent an intrusion of our privacy; it may interfere with our ability to carry on intelligible speech communication; it may disturb our ability to concentrate on a thought-provoking problem; or it may startle or frighten us.

Because annoyance has so many different connotations to different people, it is difficult to produce controlled experiments which reveal specific characteristics of noise that give rise to feelings of annoyance. As a result, case histories of annoyance problems are

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studied to try to separate the various factors which contribute to the annoyance of noise.

One authority [1] has summarized the factors contributing to the annoyance of noise as follows: unexpectedness, interference with speech and hearing, inappropriateness, intermittency, reverberation (lack of localization), intensity or loudness, and the frequency pattern of the noise (high frequency noises appear more objectionable than low frequency noises).

In our consulting firm we have had occasion to study a large number of community noise problems and to determine the principal characteristics of noise which give rise to neighborhood reaction against the noise.[6] An unwanted noise in a residential neighborhood may not convey the same feelings as an annoying noise in the plant or office, but possibly the same general characteristics are present in both types of noise situations. In neighborhood noise problems, some of the annoyance factors are associated with the noise source and some of the factors are associated with the neighborhood. The following factors are associated with the source: (1) the noise levels produced by the source (naturally, the higher noise levels are more disturbing); (2) the spectrum character or frequency distribution of the noise (a noise having most of its output in a single frequency—such as the hum of a large transformer or the high pitched whine of a turbine—is generally more objectionable than a noise having the same total output distributed over a large range of frequencies—such as the noise inside a moving automobile or the noise of a water spray); (3) the "peak" factor of the noise (sharp, staccato-like bursts of noise—such as from an air hammer—are more annoying than a smooth, uniform flow of noise—such as from an airplane—even when the total noise power of both types of noise is equal); and (4) the duration of the noise (longer noises more disturbing).

The following factors are associated with the neighborhood: (1) the background noise levels that exist in the absence of the particular intruding noise (the higher the background noise, the less objectionable the intruding noise); (2) the time of day or night when the noise is "on" (we expect lower noise levels at night because of the need for rest and relaxation); (3) previous exposure to this type of noise (when we are first exposed to new noise types we are more easily disturbed by them than when we become accustomed to them); and (4) miscellaneous connotations of the noise (political, legal, economic effects accompanying the noise). All of these characteristics of noise are probably not directly related to specific noise annoyance problems found in our plants and offices, but some aspects of some of them can be applied to almost any noise annoyance problem, particularly when coupled with the earlier listing of annoyance factors such as unexpectedness, interference with speech and hearing, and inappropriateness.

A large amount of fascinating and valuable work has been carried out by several groups to determine the influence of noise on speech communication.[1] Work in this field has been vital to telephone and radio communication in situations where it is essential that spoken information be correctly received in the presence of high background noise levels. A typical

situation in this regard is the unquestioned need for correct and accurate speech communication between the individual members of the crew of a large bomber, where the pilot, navigator, bombardier, and gunners are required to be in instantaneous contact with each other via the plane's intercom system in a continuous, high-level noise background. It was the need for better speech communication under various wartime noise conditions that has led to much of our present-day knowledge. From the many findings, just a few generalizations will be quoted here.

1. One of the more serious effects of noise on man is the interference of noise with speech communication. Varying degrees of accidents and misfortunes have been attributed to inadequate transmission of vital speech information.

2. Speech articulation tests show that the frequency range of 300 to 6000 cycles per second is most used in the transmission and reception of ordinary speech.

3. In normal speech there is a total range of approximately 30 decibels (db) between the strongest and the weakest parts of speech.[7] The listener must receive and comprehend speech sounds throughout this "dynamic" range if he is to hear all the components of speech spoken at a given voice level. The strongest parts of speech are approximately 10 to 15 db above the long-time average speech level for a given voice level, and the weakest parts of speech are approximatly 15 to 20 db below the long-time average speech level.

4. Speech can be heard and comprehended reasonably well in the presence of noise as long as the average speech level is as much as approximately 18 db higher than the average noise level. This indicates that essentially the full 30 db dynamic range of speech is required in order to provide good speech communication. For relatively higher noise levels, speech communication becomes increasingly difficult.

5. When speech communication takes place through electronic communication systems, it is possible to "clip" off the strong speech peaks and emphasize the weak speech levels so that a smaller "dynamic" range of strong to weak speech levels may exist, and a higher degree of speech information may be conveyed in a given high level noise background.[8]

6. In the presence of high noise levels, speech communication can be greatly facilitated by the use of a special pre-arranged vocabulary. Lip-reading cues also aid speech communication in high noise level areas.

7. In the presence of very high noise levels, the ear mechanism begins to "limit" or to become "overloaded," so that it appears to produce a degree of distortion and a relative reduction in the reception of auditory information.

8. Because of this "overloading" of the ear at very high noise levels, the use of ear plugs may actually improve the reception of auditory information by bringing the noise and the speech levels at the ear mechanism down to levels which do not cause distortion.[9]

9. Continuity of speech information helps the listener fill in short gaps of speech which are not heard or comprehended. Thus, intermittent noises tend to permit a somewhat higher degree of speech communication than does continuous noise of the same peak noise levels.[7]

In a later discussion these generalizations will be fitted together into a scheme which will provide a criterion of noise level requirements for adequate speech communication.

Effects of Noise on Hearing

The possible effects of noise on hearing loss are attracting interest from many areas these days. There are legal, economic and social aspects of the problem; and management, labor, the safety engineer, the industrial hygienist, the casualty insurance company and the judiciary are all involved. The higher noise levels which seem to accompany many of our modern methods and devices are not giving us time to sit back and ponder this problem. Decisions and solutions are being called for before we can thoroughly evaluate all aspects of the problem.

Because of the need for a rational unpressured approach to this problem, the American Standards Association, the Acoustical Society of America, the U. S. Navy Office of Naval Research, and the Massachusetts Institute of Technology combined to sponsor a study of all available information on industrial noise and hearing loss. A notable group of physicians and physicists, all specialists in industrial hygiene, hearing, or acoustics, was collected to make the study. Their report [10] is probably the most complete treatise on this subject to date. Because of the paucity of available useful information (well-documented and accurately taken audiograms along with employee case histories of industrial noise exposures), most of their findings can be expressed only as trends; but these trends are helpful in estimating the relative severity of a particular noise problem as regards the possibility of hearing loss.

First, completely independent of any kind of noise exposure, for an average population there is a gradual hearing loss which accompanies increasing age. This type of hearing loss is referred to medically as "presbycusis." For example, for men (on the average) there is an increase in hearing loss of approximately 0.9 decibel per year for each year past the age of approximately 25 for the frequency region of approximately 4000 cycles per second; approximately 0.6 db per year for each year past 30 for the frequency of 2000 cps; and approximately 0.3 db per year for each year past 35 for the frequency of 1000 cps. For women, hearing loss does not increase with age quite so rapidly (or can it be that age does not increase so rapidly with women?). These, of course, are average values for large population samples; individual variations from these averages may vary significantly due possibly to heredity, general state of health and medical history of ear troubles. These values of hearing loss are associated with average living and working conditions in environments which would not be classified as noisy.

For persons spending essentially all their working hours (say 8 hours per day, 5 or 6 days per week) in noisy working environments, there is added to the normal hearing loss with age (presbycusis) an extra amount of hearing loss which now can be reasonably well related to the type of noise environment.

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Emphasis has been placed on keeping the instrument small, light weight, easy-to-use, reliable and low in cost. Its unobtrusiveness has made the Sound-Survey Meter highly popular with those concerned with the problem of industrial-noise damage to the human ear. This instrument is widely used in a variety of industrial-measurement applications not requiring the refinements of the Type 1551-A Sound-Level Meter.

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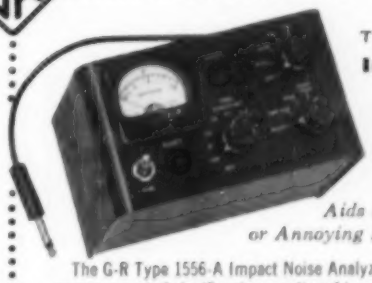

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The report described above indicates that for continuous 8-hour-per-day exposures to noise levels in the vicinity of 80 db (relative to the standard reference sound pressure of .0002 dynes/cm^2) in each of the frequency bands of 150–300 cps and 300–600 cps and dropping down to approximately 75 db in each of the frequency bands of 600–1200 cps and 1200–2400 cps there is negligible hearing loss in the 1000 cps and 2000 cps frequency regions for exposure periods up to 20 and 30 years. For these noise levels, however, hearing loss at 4000 cps begins to be significant, amounting to about 5 db for continuous exposures of 2 to 5 years and about 10 db for continuous exposures of 10 to 20 years. This in itself is not too serious; rather, it serves somewhat as a warning signal.[11] (For these studies 1000, 2000 and 4000 cps were selected because these frequencies typify an important part of the range of frequencies used in normal speech communication. Lower frequencies are also used in hearing speech, but hearing loss is fairly small for these lower frequencies.)

It was indicated earlier that normal hearing loss at 4000 cps appears to begin at an earlier age and to progress more rapidly than that at the lower frequencies of 1000 cps and 2000 cps. It now appears that when more than a normal amount of hearing loss is experienced by a person working in a noisy environment this may be the warning signal that the person is susceptible to noise and that remedial measures should be undertaken. Thus, where excessive hearing loss at 4000 cps can be discovered early, it appears that steps can be taken to avoid later hearing loss at the lower frequencies (which possibly are somewhat more essential to long time hearing preservation).

The report also shows the effects of still higher noise levels. For continuous 8-hour-per-day exposures to noise levels in the vicinity of 90 db in each of the octave frequency bands of 150–300, 300–600, 600–1200, and 1200–2400 cps, there is an average hearing loss of about 5 db at 1000 cps, 10 db at 2000 cps and 20 db at 4000 cps for approximately 5 years' exposure and 10 db at 1000 cps, 15 db at 2000 cps and 30 db at 4000 cps for approximately 20 years' exposure. Still higher noise levels would presumably result in still higher values of hearing loss. There are a few more or less subtle qualifications which should be considered in an elaborate study and use of the data given above. The reader is invited to study the report in detail for a more thorough interpretation of the data.

The hearing loss data presented in the report were primarily associated with steady, continuous types of noise. There is still little information on the corresponding effects of intermittent, impulsive noises that are of short duration but of a possibly much higher peak noise level, such as the noise of a punch press or a drop forge. There is also insufficient information on the distribution of hearing loss among large groups of persons having the same noise exposures. Some data indicate rather large variations around the average values of hearing loss.

In summary, there is little doubt that definite trends of hearing loss are shown to be attributable to high noise levels, and a significant amount of reasonably reliable data provide the basis for some quantitative relationships between noise exposure and hearing loss.

Now, let us return to the title of this paper "Does Noise Affect You and Your Work?" This short dissertation does not do justice to the many painstaking and laborious studies which have been reviewed so briefly, but it appears that we can draw from each study a part of the answer to our question. We can probably say that we can work with normal efficiency and at a normal pace in the presence of noise, but that we may experience somewhat greater fatigue in working under the duress of distracting noise. We are also generally aware of the annoying effects of noise when it is particularly disturbing or inappropriate. We have all experienced difficulty in speech communication in high noise level areas so we can appreciate many of the empirical findings on the technical aspects of noise interference with speech and hearing. And finally, we find some positive evidence of actual hearing loss which has been found to acompany long-time exposures to moderately high noise levels. Thus, it would appear that each of us in one way or another has experienced a number of instances in which noise has affected us and our work.

Editorial Note: In the next article (in the July issue) recommended noise levels will be specified for various areas found in typical office and plant situations. These noise levels will be seen to be determined by the uses required of the areas and by the type of work performed by the occupants of the areas. Also the actual noise

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- Once installed, GETS-A-LITE GUARD AND GUIDE is NEVER removed.
- Nothing to unlock, fuss with or lock, when changing lamps.
- GETS-A-LITE GUARD AND GUIDE actually steers lamp into socket, enabling maintenance man to change lamp in 10 seconds!
- Available for 40 watt and 100 watt fluorescent lamps.

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(For details, use Key # 5-23 on card on page 37)

levels measured in several typical work areas will be presented.

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Responsibilities for Smog Research

Research, not legislation, is the basic answer to the problem of air pollution, according to W. L. Faith, vice president and chief engineer of the Air Pollution Foundation, Los Angeles. He spoke at the air pollution session of the 18th annual American Power conference, sponsored by Illinois Institute of Technology, in Chicago.

Faith warned that unless legislation is based "on knowledge of the facts," the harm done may override any good that will result.

"Roughly half of the fuel burned in large communities is burned in transportation equipment, private homes, and other nonindustrial units," he explained.

Faith divided air pollution research into four categories:

—Chemical, physical, and meteorological aspects.

—Health aspects of air pollution, including damage of vegetation.

—Identification and measurement of emissions at the source.

—Development of abatement methods.

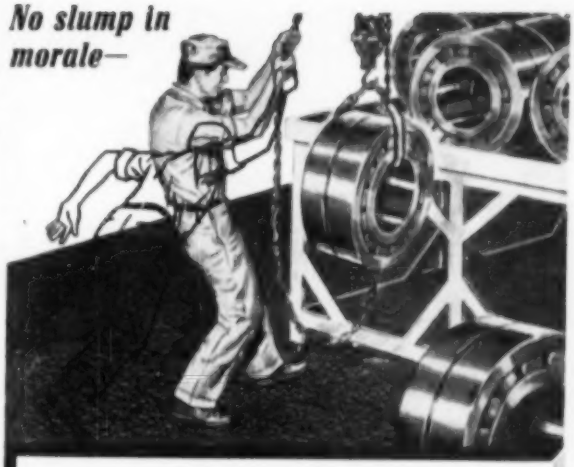
Concerning the responsibilities of the various segments of society for air pollution research, he proposed that:

—Local government should determine the rate and type of emissions of air pollutants from local sources and monitor the atmosphere for important contaminants.

—Federal and state governments should share responsibilities for determining the relationship between air pollution and public health, the maximum allowable concentrations of air pollutants under various atmospheric conditions, and the nature of air pollution problems that transcend local, state, or national boundaries or affect general agricultural pursuits.

—Industry should determine the nature of its emissions, develop control devices, improve its fuels and combustion equipment, and support community programs directed toward a solution of the air pollution program beyond its own gates.

No slump in morale—



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(For details, use Key # 5-24 on card on page 37)

Early in the chemical industry it was recognized by those in the laboratory that **acidity** or **alkalinity** played an important part in the development of a product. When these terms could be pinned down and measured, science, medicine, industry—in fact, a great many phases of human endeavor that depend in part on physical phenomena—reaped tremendous benefits.

pH, briefly, is a numerical measure of this **acidity** or **alkalinity** just as "degree" is a measure of temperature and "inch" is a measure of distance.

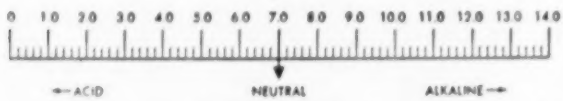
There are a great many different acids, some of them strong, some weak. Some will dissolve iron nails like sugar; some, like boric acid, are weak enough to use as an eyewash. Although these acids have widely varying properties and strengths, they all owe their acidity to a common property: they produce hydrogen ions when water is added to them. Hydrogen ions are electrically charged particles which exist only in solution.

The strength, or **degree of acidity** of the acid depends on the **amount** (an actually measurable weight) of these hydrogen ions liberated. Strong acids produce relatively large amounts of them; weak acids produce low concentrations of them.

It so happens that the numerical values are very small fractions and awkward to use—1/10,000,000 for example. We can thank a Swedish chemist for working out a simple arithmetic arrangement relating these concentrations with small whole numbers, so that acidity, and alkalinity also, can be expressed by a convenient scale which runs from zero (for the strongest acids) to seven for a neutral solution such as water.

Now all that has been said above for **acidity** and hydrogen ions also applies to **alkalinity** and hydroxyl ions. These are negatively charged particles produced in a like manner by alkalies when they are dissolved in water. A similar scale could be worked out relating alkali strengths to small numbers. In this case, the strongest alkalies would be on the high end of the scale, pH of 14, with water at the neutral end, pH of 7.

In water solutions the total number of both hydroxyl and hydrogen ions always reaches a constant, which in pH terms is 14. Since the degrees of acidity and alkalinity bear a constant relationship to each other, two scales are unnecessary and pH values alone may be used to express both acidity or alkalinity.



The acidity-to-alkalinity range runs from 0 to 14 with 7 as the neutral point, and those numbers less than 7 express increasing acidity and numbers greater than 7 are of increasing alkalinity. It is worthwhile noting also that a change in one unit of pH represents a ten-fold change in acidity or alkalinity.

At first, pH could not be measured very accurately. There are dyes that will change color in solutions of various pH. Litmus was one of the earliest used, and even the high school student learned that litmus paper turns blue in alkalies and red in acids. Other pH papers are impregnated with a solution of one or more dyes and their color in an unknown pH solution can be compared with a color scale to indicate pH, with some reliance, to ½ or ¼ of a pH unit, providing the solutions themselves do not overly discolor or bleach out the dye. It was known that when the proper types of electrodes are immersed in a solution, an electrical potential develops and its strength depends on the pH. With the help of modern electronics and improvements in the electrodes, it is now possible to measure pH reliably to 0.1 of a unit on a pH meter. Moreover, it can be measured in a beaker of solution or in a flowing stream out in the plant.

That increasing pH (stronger alkalinity) of detergent solutions promotes better washing has been known for a long time. An optimum range of pH (9.5 to 10.7) in which neutral soaps show best sudsing and detergency was pointed out to the laundry industry by Boedecker of Colgate back in 1935.[1] Alkaline salts of varying strength, such as soda ash, trisodium phosphate, and a variety of silicates came into use to build better detergency in the soap powders sold both for home and laundry use. These materials are termed "builders." They are effective and are still important but the stronger ones have largely been replaced by milder and more efficient types in recent years.

How Important

From this background it is understandable that early formulations attempting to strengthen the soil-removal ability of industrial skin cleaners for heavier duty needs would employ formidable quantities of these alkaline salts. This was done and still is done occasionally but continued use of such preparations may lead to damage.

Danger of Alkalinity?

Van Scott and Lyon [2] in their report on the use of sulfhydryl groups to measure the effect of soaps and detergents on the skin, state that comparatively little is known about the mechanisms whereby dermatitis is produced by soaps and detergents. The ill effects of these agents variously have been ascribed to their defatting action, sensitizing potential, pH, or direct chemical actions on the skin.

Earlier studies by Huess in 1892 pointed up the natural acidity of the human skin and the need for skin preparations to be "on the acid side," compatible with this acidity. Actual pH measurements in the range from 5.5 to 6.5 were made in the early twenties.[3, 4] The possible dangers of using soap built with sizeable amounts of alkalies are brought out by McCord [5] and Klauder and Gross.[6]

A similar situation has been pointed out by Stupel [7] for heavy duty detergents built with alkaline salts. He stated, "It is not the actual pH (strength) of the

solution but the **amount** of alkali, i.e. titratable alkali, that is responsible for alkalization of the skin." In fact, many investigators have shown that the length of time the skin remains alkaline after a wash is somewhat greater with increasing pH, but particularly so with increase in the amount of alkaline salts applied. Ramsey and Jones [8] report tests on normal skin showing that its pH will rise to almost 8 when it is washed with a pure, neutral soap, but it remains alkaline for only a short time, returning to a normal of about pH 5.0. This confirms similar findings by Jacobi and Heinrich,[9] and Schneider [10] who also mentions the importance of good rinsing in lowering the time necessary for a return to the acid mantle. Several authorities including Schwartz,[11] Rothman [12] and Burckhardt [13] have written about the swelling, softening, and the dissolving action of alkaline solutions on keratin, the horny outer layer of the skin. Higher pH values, and the most persistent pH raising effect of soap is stated by Nelson and Stroesser [14] to occur in the fissures or narrow clefts of the hands in eczematous conditions.

By the chemist, soap is understood to be a salt made by the neutralization of the fatty acids from fatty oils by alkalies such as caustic soda and potash, among others. Although these fatty acids are weak

Is Your Soap's

by **WILLIS J. BEACH**, Chemist
Technical Service Department
Sugar Beet Products Co.

pH

What does "pH" mean?

How does it affect your skin?

Is high pH dangerous?

acids (relative to strong mineral acids such as muriatic) and the alkalies are strong, a "neutral" soap results when just enough of the strong alkali is added to the soap kettle to react and combine with the fatty acids—no more, no less. When some of the neutral soap is dissolved in water, a small quantity of the soap undergoes hydrolysis. A simplified explanation of this is that the chemical bond between the fatty acids and the alkali is broken, releasing equal amounts of the fatty acids and alkali. Since the alkali is stronger in nature (higher on the pH scale), an alkaline condition prevails which is known as "hydrolysis alkalinity." Thus, a neutral soap that might itself test only 7 or 8 on the pH meter will test as high as 10.5 when dissolved in a 1% solution with neutral water. It should be realized that in this case of hydrolysis alkalinity the pH is rather high but the actual **amount** of free alkali is small.

This hydrolysis alkalinity has at times been pointed out as the cause of much skin irritation attributed to soap. This may be a contributing cause in cases of frequent and prolonged exposures as pointed out by Burckhardt [15] but, in general, where **small amounts** of alkali are present, as in the hydrolysis alkalinity of dilute soap solutions, the skin rapidly recovers its acid mantle and there is no trouble. According to Emery and Edwards [16] the skin itself exerts considerable neutralizing or buffering power against the effects of hydrolysis alkalinity.

✓ [redacted]

On the other hand, the dangers of using soap built with sizeable quantities of alkalies are brought out by McCord [5] who states, "Any prolonged disturbance of the normal pH of the skin may result in trouble. Profuse sweating during the summer as well as the absence of enough perspiration in winter may lead to an increase in pH with attendant skin damage, particularly if an alkaline soap is used." We would interpret this to be particularly significant when quantities of strong alkali builders are used in hand cleaners under these circumstances.

Is it then simply a case of prolonged departure from the normal skin pH that causes trouble, or are there secondary effects? According to McCord [5] and also Nelson and Stroesser,[14] this softening and swelling of the protective layer due to alkalies is of no great significance to most people. Also, no marked relationship has yet been found between the true pH values (not hydrolysis alkalinity) of neutral solid soaps of various composition and skin irritation.

Other Factors

Several workers point out that soaps of the lower chain fatty acids (laurates and myristates) known to be the most irritant, have a pH much lower than the less irritating stearates and palmitates. Lane and Blank,[17] working with soaps of saturated fatty acids, have found that irritation from patch tests with pure, neutral soaps actually decreased as molecular weight and pH increased. They state, "It is believed by many that while low molecular weight fatty acids such as lauric may be irritating at low pH, the higher molecular weight acids like stearic may become irritating only if the contacted skin surface is maintained either at a relatively high pH or possibly not so high a pH for a longer time." So it would appear to us that skin irritation results in many cases from the types and combinations of the fatty acids used rather than simply to the pH of the soaps themselves or their pH during hydrolysis.

All this leads to the conclusion that although pH is of some significance in skin cleansing, the greatest danger lies in the use of excessive quantities of the stronger alkalies used with the soaps rather than simply the pH or strength of the alkalies or soaps themselves. Also, the dermatologists point out that too frequent washing of the skin is to be avoided. However, people in industry faced with potentially harmful soils cannot rely in many cases on protective barrier creams. They must wash more often and with a safe skin cleaner.

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Why Is Salt Essential to Life?

by **THE SALT INSTITUTE**

Most workers employed in industries where blast furnaces and heat producing equipment add to the discomfort of high summer temperatures know that heat cramps and heat prostration are the symptoms of salt depletion from excessive perspiration.

But the man who is weary and dizzy after a bout with the lawn mower in the hot sun doesn't often associate those symptoms with a deficiency of salt.

Nor does the misled dieter attribute his undue fatigue to too little salt in the system.

Few essentials of life and health are so little understood and so little appreciated as salt. A person can't live without it.

Each continued heat wave brings its quota of deaths from heat exhaustion. And those deaths range in every age level from infants through the life span to elderly people.

Not all, but many of those deaths could be avoided if individuals watched their summer intake of salt by matching the amount of salt lost through perspiration with salt tablets or more salt in their food.

So precious is salt to the human body that nature has provided us with a mechanism by which the crucial amount we need may be indefinitely preserved to us. As the kidneys clear the blood flowing through them of excess water and other waste materials, they inevitably remove also a certain quantity of salt. When salt is present in excess, that salt is permitted to pass off with other excess. But when the salt reserve is low, the body does not excrete the needed salt, but holds it to preserve life and normal function.

Excessive perspiration drains salt from the system. It is for this reason that persons exerting in the sun or perspiring freely should increase their salt intake to compensate for the amount lost in perspiration.

When excessive sweating robs the body of needed salt which is not replaced, health deteriorates and these symptoms, progressing from mild to critical, occur in ratio to the degree of salt deficiency: weariness, loss of will to work, forced effort, dizziness, heat cramps, prostration.

Prostration may be followed by death if the deficiency is not corrected quickly.

But there still are those who tamper with their salt balance without medical advice. Why do they do it?

The people who cut out salt in the hope of some personal benefit fall into two groups. In one group are overweights who are swayed by hearsay that someone lost weight on a low salt diet. The second group attempts self-diagnosis of diseases with which low salt diets are associated. So, in the hope of preventing or curing whatever may be wrong, they are prompted to try the diet the doctor gave Cousin Joe last year when he "had his coronary."

To understand the reasons why the individual should not attempt to disturb his salt balance without medical advice, it is necessary to review the role of salt in human physiology.

Human beings get sodium from food, water and chemicals used in the preparation and preservation of food. The great bulk of it is in the form of sodium chloride—table salt. Some more comes from baking soda—sodium bicarbonate—used in cooking, or from sodium benzoate added to many foods as a preservative. There are others, but these are the principal sources.

The sodium is absorbed from the intestinal tract into the blood. The body then uses as much as it requires for normal function at the time and excretes the rest, mostly by way of the kidneys, and in the perspiration.

The sodium retained by the body is added to the blood plasma or to the interstitial fluid—the fluid which lies outside the various cells of the body and which constitutes about 15 percent of the body weight in persons of normal weight. The total amount of sodium retained in a healthy body is precisely adapted to the size and needs of the individual. A man weighing 150 pounds would retain close to 35 grams of sodium which would amount to 88 grams of salt, or about three ounces.

It has been pointed out that any excess sodium is excreted. If the daily dietary supply goes below the need, however, the body promptly stops excreting it and holds grimly to the quantity necessary to preserve life and maintain function.

Another important fact about sodium is that the healthy body always holds enough water to keep the sodium at the proper concentration, and vice versa. If there is excess sodium and too little water, the kidneys' protective devices will hold water and throw off sodium. With too little sodium and too much water, the kidneys remove the water and hold the sodium.

Used in Several Ways

Sodium is used by the body in several ways. Briefly, sodium and chlorides outside the cells, work together to maintain a balance which is essential to proper function of the cells and the organs they comprise. In the blood plasma, sodium helps maintain the proper acid-alkali balance. Sodium also participates in conducting nerve impulses and thus affects the muscle contractions.

The chlorine atom of the sodium chloride molecule has its own individual importance to health. Salt, for instance, is highly important to the digestive process. In the gastric juices the chlorine of salt aids in the manufacture of hydrochloric acid necessary to digestion in the stomach. Chlorine also becomes part of the extracellular tissue fluid in the body, as does sodium.

Salt aids in the production of bile, which stimulates digestion in the intestines. Salt stimulates the peristaltic movement of the digestive tract, and to a certain extent affects muscle strength.

Salt is also a carrier for iodine, another element essential to health.

What happens when the individual gets too little salt? In persons of all ages where the salt supply is inadequate or has become severely depleted, the blood volume is reduced and the result is interference with the supply of oxygen and other elements to the tissues. The body makes powerful efforts at keeping alive, even to the point of releasing vital substances from the cells in an attempt to replace the normal balance in the fluids, and when this occurs there is damage to health and hazard to life.

It is risky business for the layman to upset his salt balance without medical advice. Then where did the fad start?

The Salt-Free Diet

Low-sodium, salt-free, salt-poor, or sodium-restricted diets—call them by any name—are prescribed by physicians for some—not all—patients suffering from certain serious heart, kidney and liver diseases. Each of these is a serious prostrating illness which is fatal if not skillfully and competently treated.

These diseases are not caused by salt, but salt is sometimes restricted to relieve the symptoms. These diseases have one symptom in common—failure to excrete surplus water. The water accumulates in the tissues and also holds sodium to maintain the proper concentration in the blood. The fluid accumulation is known as "edema" or, in the old term "dropsy."

By restricting salt, or sodium, in these heart, kidney and liver conditions, the physician seeks to release the water from the tissues.

It is obvious that draining water from the body by extreme measures will also reduce the weight, but the obese man or woman who hopes to cut his or her weight down permanently by this method is going to be disappointed. All his loss, if he succeeds in losing anything, will be water, and his fat content will be undisturbed. And the water is quickly replaced.

Assuming that the amateur does reduce his salt intake over a long period of time, and cuts his salt reserve to minimum levels, then runs into serious trouble such as a severe injury, major surgery, a heat spell with excessive sweating—what then? The answer is clear. He then develops the symptoms of salt deficiency. That is when he pays the penalty of self-diagnosis and treatment, and the trouble is that he may not get over it.

It is true, of course, that the symptoms of salt deficiency may appear in salt-restricted patients, even under medical care. The symptoms range from fatigue to prostration—the results of the loss of extracellular fluid, and disturbances of potassium balance, kidney function and of nitrogen balance. But these are part of the risk run by the patient to escape another danger to health—edema. He is safe, however, for the physician stands watchfully by to guard him, and to increase the salt reserve when necessary.

So, for those who may be tempted to try a low-salt diet to prevent or cure a disease, the only conclusion can be: It is unwise to trifle with serious disease. A man who needs a low-salt diet is dangerously ill. No one else would get any benefit from it.

And for those who think that foregoing salt will melt away the pounds, the advice is: the only way to reduce body weight is to reduce food intake. Salt does not cause obesity. It has no caloric value. Reducing salt intake will not eliminate excess fat.

We welcome case histories of programs that have done a good job for you in preventing accidents. Merely address your letter or memorandum to The Editor, Safety Maintenance, 75 Fulton St., New York 38, N. Y. and enclose with it an outline of how you organized and launched your safety programs or actual literature you used in publicizing them. Safety is a cooperative venture—what helps one helps all.

Trends in Safety Awards and Incentives

There are "fashions" in safety awards, just as there are fashions in clothes.

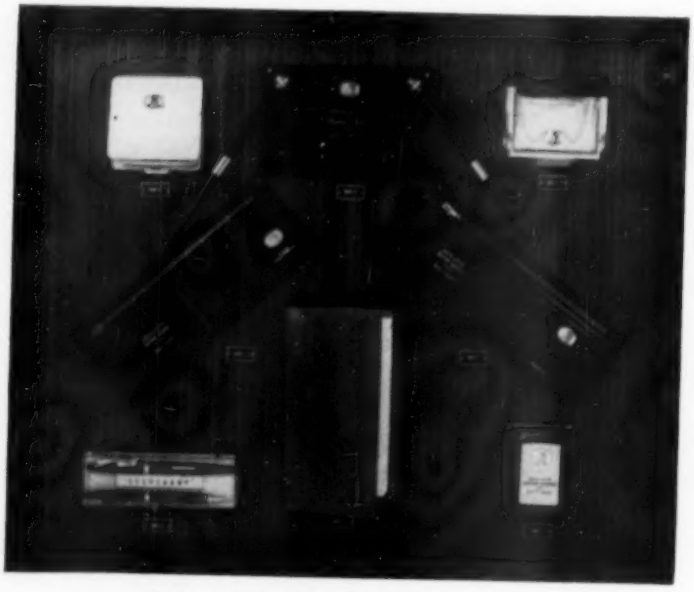
The Safety Director today is fully aware of the immense value in the new trend of presenting each winning employee in a contest with a personalized individual award in conjunction with the group plaque or trophy. This trend is producing really successful programs that maintain interest and cooperation from each employee throughout the entire length of the contest.

One of the largest utility service companies in the world has created a unique method of making such awards to all those employees in a department who go 6 months with no lost-time accidents. An attractive display panel is placed prominently in each division for the length of the contest, displaying selected individual gift items, with the company emblem affixed. The winning employees are then allowed to select any of these handsome and practical items as their personal award for working a 6-month period without a lost-time accident. Gifts shown on the 20" x 24" panel were selected to fit in a price range of approximately $3 and included wallets, compacts, pen and pencil sets, pocket secretary, cigarette lighters, and desk pen sets. (In other instances, tool kits, traveling bags, weekend kits, playing cards, etc. were chosen). This allows for a divergence of taste; those who are smokers might choose a cigarette lighter, the "do-it-yourself" group would possibly prefer a "tool kit," or perhaps someone might wish to give his wife a present, such as the compact.

To stimulate and gain maximum interest, the gift awards were photographed in color, with the photos then distributed to employees via the company's house organ, bulletin boards and circulars.

Performance depended on the complete department reaching an allotted goal of no lost-time accidents in 6 months. Awards of increasing value will be given those departments that reach their second and third goals.

These types of awards kindle team spirit among employees, so that they will work together for greater safety records, and the personal gifts act as incentives to achieve any goal where team spirit and cooperation is needed. A very important facet of these practical personalized awards is that they are constantly used by the winner, and serve as long-time reminders to the employee each time they are used. They provide a powerful force for getting employees to "think safety" over a period of time by constantly reminding employees of safety by using an award —and one that bears the company insignia and safety message.



Display panel of gift safety awards.

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Dorado, Ark., chemical
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(For details, use Key # S-25 on card on page 37)

plant since 1952, will be presented to the El Dorado plant at special ceremonies. The plant has operated since July 4, 1953, without a lost-time accident.

• • •

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• • •

Employees of The Chemstrand Corporation's nylon plant at Pensacola, Florida, have achieved the

We welcome case histories of programs that have done a good job for you in preventing accidents. Merely address your letter or memorandum to The Editor, Safety Maintenance, 75 Fulton St., New York 38, N. Y. and enclose with it an outline of how you organized and launched your safety programs or actual literature you used in publicizing them. Safety is a cooperative venture—what helps one helps all.

Trends in Safety Awards and Incentives

There are "fashions" in safety awards, just as there are fashions in clothes.

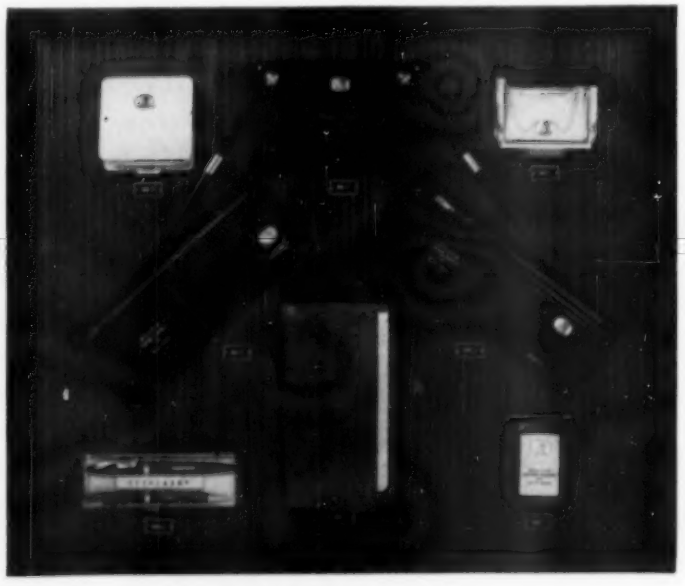
The Safety Director today is fully aware of the immense value in the new trend of presenting each winning employee in a contest with a personalized individual award in conjunction with the group plaque or trophy. This trend is producing really successful programs that maintain interest and cooperation from each employee throughout the entire length of the contest.

One of the largest utility service companies in the world has created a unique method of making such awards to all those employees in a department who go 6 months with no lost-time accidents. An attractive display panel is placed prominently in each division for the length of the contest, displaying selected individual gift items, with the company emblem affixed. The winning employees are then allowed to select any of these handsome and practical items as their personal award for working a 6-month period without a lost-time accident. Gifts shown on the 20" x 24" panel were selected to fit in a price range of approximately $3 and included wallets, compacts, pen and pencil sets, pocket secretary, cigarette lighters, and desk pen sets. (In other instances, tool kits, traveling bags, weekend kits, playing cards, etc. were chosen). This allows for a divergence of taste; those who are smokers might choose a cigarette lighter, the "do-it-yourself" group would possibly prefer a "tool kit," or perhaps someone might wish to give his wife a present, such as the compact.

To stimulate and gain maximum interest, the gift awards were photographed in color, with the photos then distributed to employees via the company's house organ, bulletin boards and circulars.

Performance depended on the complete department reaching an allotted goal of no lost-time accidents in 6 months. Awards of increasing value will be given those departments that reach their second and third goals.

These types of awards kindle team spirit among employees, so that they will work together for greater safety records, and the personal gifts act as incentives to achieve any goal where team spirit and cooperation is needed. A very important facet of these practical personalized awards is that they are constantly used by the winner, and serve as long-time reminders to the employee each time they are used. They provide a powerful force for getting employees to "think safety" over a period of time by constantly reminding employees of safety by using an award —and one that bears the company insignia and safety message.



Display panel of gift safety awards.

Industrial safety awards were presented to employees of the Salt River Power District with employees at the Crosscut Machine Shop winning the highest safety rating, having accumulated the largest number of accident-free hours in the Salt River Power District during 1955 and for having the best overall safety performance record. The Shop also won the No Lost Time Accident Award for the year.

In addition, each employee received zippo pocket lighters, if first year winners; sterling silver pocket knives, if second year winners, and zippo table lighters, if third year winners.

Awards to other divisions included the Safety Award, presented to the section of each contest group having the lowest accident frequency in that group; a No Lost Time Accident Award presented to any section completing a calendar year without a lost time accident.

• • •

In recognition of chalking up a new safe driving record last year, thirty-five drivers of The Western Express Co. of Cleveland were entertained at the firm's Safety Award Luncheon recently. Souvenirs of the luncheon were silver bowls. On each was engraved "1955—Western's Safest Year."

During '55, Western's accident frequency was cut to ½ of the national average for the industry. Also, public liability and property damage cost was slashed to ⅓ of the industry's national average. Both marks came on the heels of a "million-miles-no-accident" record by the same company in '54. Seen as the key influence is Western's highly organized Safety Program inaugurated 3 years ago, drivers were lauded for their determined effort in setting the new safety mark despite increasing traffic hazards.

• • •

The El Dorado, Ark., chemical plant of Monsanto Chemical Company's Lion Oil Company Division has won the General Managers' Trophy for establishing a new company safety record by operating more than 5,373,400 safe man-hours.

The Trophy, which has been held by Monsanto's Nitro, W. Va., plant since 1952, will be presented to the El Dorado plant at special ceremonies. The plant has operated since July 4, 1953, without a lost-time accident.

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(For details, use Key # S-25 on card on page 37)

goal of completing over 4,000,000 safe man hours of work, it was announced by Fred G. Gronemeyer, plant manager. This safe working record began on August 24, 1955, and represents a period of 181 days operated around the clock without a disabling injury by over 4,000 employees.

At the 3,000,000 safe man hour mark the plant received an award of honor from the National Safety Council. Previous council awards of merit for 2,000,000 safe man hours of work have been received by the nylon plant during its two and one half years of operation.

In recognition of one whole year without a lost time injury, personnel of The Chemstrand Corporation's Research and Development Laboratories at Decatur, Alabama, have been awarded a Certificate of Merit by the State of Alabama, Department of Industrial Relations, and also a plaque from the Lumbermens Mutual Casualty Company for the laboratories' 1,295,483 safe man hours over a period of 747 working days without a disabling injury.

• • •

Russell E. Henderson, Avon by the Sea, New Jersey, letter carrier, received the National Safety Council's President's Medal and life-saving Certificate and the Post Office Department's Superior Achievement Award at ceremonies held in the Philadelphia Regional Office of the Post Office Department.

On February 16, 1955, Mr. Henderson was attracted to a boat dock by a woman's screams. He discovered a boy had fallen through the ice and was trapped in it. Mr. Henderson broke the ice and rescued the unconscious boy from the icy water. He directed the woman, later identified as the boy's mother, to call an ambulance and immediately applied artificial respiration.

Through the efforts of Mr. Henderson's prompt and alert action in administering artificial respiration, he was able to save the life of Charles Pinto of Avon by the Sea, New Jersey.

The Post Office Department's Superior Achievement Award is given to employees for outstanding achievement in performing an act of heroism while on duty.

• • •

Two plants of American Cyanamid Company's Organic Chemicals Division recently received company awards for attaining perfect on-the-job safety records over extended periods of time.

The Damascus, Virginia, plant was granted the Cyanamid Safety Award plaque for accident-free operation for more than 400,000 man-hours from December, 1950, to the end of 1955. The Charlotte, North Carolina, plant received the Cyanamid Award of Merit for 263,985 man-hours worked from February, 1953 to January, 1956.

To date, Damascus plant employees have worked close to 2,000 days with a perfect on-the-job safety record, and the Charlotte operation has totalled more then 1,100 days.

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(For details, use Key # S-26 on card on page 37)

THE FIRE FRONT

March Losses Higher

Estimated fire losses in the United States during March amounted to $89,315,000 the National Board of Fire Underwriters has reported.

According to Lewis A. Vincent, NBFU's general manager, this $89,315,000 loss represents an increase of 1.3 percent over losses of $88,197,000 reported for March, 1955, and an increase of 6.3 percent over losses of $84,041,000 for February (1956).

These estimated losses include an allowance for uninsured and unreported losses.

Spontaneous Combustion

Spontaneous combustion is the heating and ignition of a combustible material caused by chemical action rather than by a heat source such as a flame or a spark. Rather complex reactions are involved in this chemical action and the technical details regarding them are not well known. In general, however, spontaneous combustion starts with a slow oxidation which generates heat. The increased heat quickens the chemical action and this action continues at accelerated speed until the substance smolders and bursts into flame. With ordinary materials, oxidation and heating occur only under a combination of favorable circumstances. There must be a sufficient air supply for oxidation, but ventilation must be sufficiently restricted so that the heat of oxidation is not carried away. These conditions are generally found in large masses of material not too tightly packed, and the material must be finely divided so as to present a relatively large surface exposed to oxidation. Even then, the chemical process is rather slow in most materials and it may be a matter of hours, days, or even months before flame appears so that it is extremely difficult to predict when ignition will occur.

Certain materials are, of course, inherently more susceptible to spontaneous combustion than others. Sawdust, hay, grain and other plant products such as jute, hemp and sisal fibers ignite readily; temperatures in excess of 140° F are considered dangerous in coal piles, and charcoal is especially subject to spontaneous combustion. The National Fire Prevention Association has compiled a "Table of Materials Subject to Spontaneous Heating" which will be of special value to industries and processes

(Continued on the next page)

Dry Chemical Truck

What is believed to be the first dry chemical fire truck in the electrical utility industry was recently added by the Pennsylvania Power & Light Company to protect its substation at Siegfried, Pa., and other nearby installations where water is in short supply.

The truck was adapted to fire-fighting purposes by PP&L's Test Department, working in conjunction with a fire extinguishing equipment manufacturer. It has a 500-pound capacity dry chemical tank, to which are connected two 100-foot hose lines—one on each side of the truck. Two nitrogen cylinders pressurize the dry chemical tank.

The truck also carries a 138-gallon water tank, supplying two hose lines equipped with spray nozzles; nitrogen cylinders for pressurizing the water tank, two hand portable dry chemical extinguishers, and various accessories, such as ladders, spotlights, axes, asbestos suits, gas masks, etc.

In addition, the truck carries a complete complement of dry chemical and nitrogen for recharging both units. Although the new truck is based at Siegfried, it is available for fire-extinguishing assignments at other PP&L stations within a 25-mile radius.

Picture by courtesy of Ansul Chemical Co.

employing questionable materials, but in most industrial factories and plants, spontaneous combustion fires are caused by the careless or improper storage of oily rags, solvent soaked rags and oily mops or waste, or by oily clothes in lockers. Good housekeeping is therefore the most important single element in preventing the start and spread of spontaneous combustion fires.

Accumulations of combustible refuse such as oil-soaked and paint-covered clothing, rags, waste, excelsior and shavings are quite liable to cause fire and should be removed each day from every workroom and deposited in receptacles provided for this purpose. Self-closing metal containers or waste cans with raised and ventilated bottoms in which to place oil and solvent-soaked waste and rags should be provided at convenient locations about workrooms, and such materials should not be left on the floors, nor placed in lockers, cupboards or bins. At the end of the day these waste cans should be emptied and the contents safely disposed of. Fires in lockers are frequent and are usually due to spontaneous combustion in oily clothes and rags. Lockers, therefore, should be of metal with sloping tops, solid backs and solid dividing partitions so that any such fires may be contained.

Clean waste, while not as dangerous as oil-soaked waste, is still liable to spontaneous combustion and should be kept in metal or metal-lined bins with tight-fitting, gravity closed covers. This is true also of such packing materials as excelsior, straw and burlap.

Oily sawdust, lint, metal turnings and scraps are just as liable to cause fire as are oily rags and should be treated with equal care. Fires in iron, nickel, aluminum, magnesium, and other finely divided metals are often attributed to spontaneous combustion which is thought to result from the oxidation of cutting or lubricating oils or to chemical impurities. Closed containers should also be provided for these materials and they, too, should be emptied daily.

Many flammable liquids also combine readily with oxygen in the air at ordinary temperatures and give off heat. When these liquids are present on waste, rubbish, or other materials under conditions in which heat is produced faster than it is dissipated, the temperature rises and ignition may occur. The best preventative against spontaneous combustion always is either total exclusion of air or good ventilation.

By courtesy of The Protectoseal Co.

NFPA Meeting

Sixty years of fighting fires with engineering and public education will be marked when the National Fire Protection Association holds its sixtieth consecutive Annual Meeting in Boston the week of June 4–8, 1956.

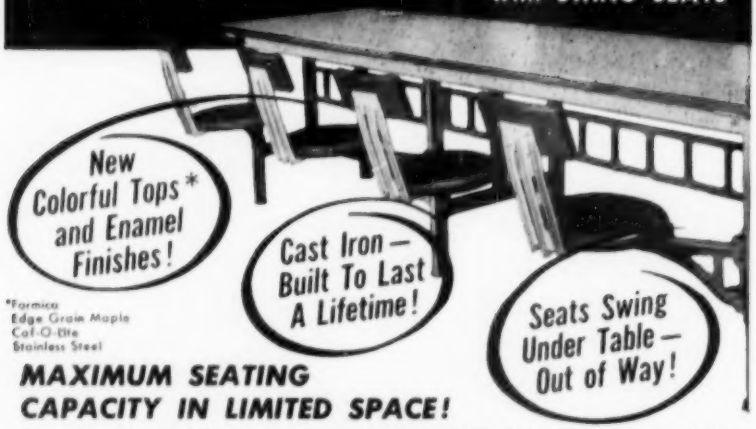
The international fire safety group, founded in 1896, is the source of most of the nation's fire protection standards, suggested ordinances and codes. Also the Association sponsors the principal North American fire safety campaigns including the public service advertising drive featuring "Sparky" the fire preventing Dalmatian.

All aspects of fire prevention and fire protection will be treated by 33 speakers in a series of 12 sessions. Discussions will cover recent fire safety developments in aviation, industry, construction, automation, research, education, flammable liquids and gases, and in city and rural fire fighting techniques.

The NFPA membership at the meeting will also act to officially approve or disapprove of more than 30 new and revised fire safety standards including those relating to safety to life in public buildings, aircraft and airport fire safety, building construction, extinguishers and extinguishing systems, flammable liquids and flammable gases, hospital operating rooms, forest fires, explosion prevention, and fire fighting equipment.

Industrialists, fire departments and fire officials, the military, fire protection and safety engineers, and representatives of many other special interests and the public comprise the membership of the non-profit technical-educational fire safety group which currently exceeds 16,000 individuals and organizations from all over the world.

INDUSTRIAL AND INSTITUTIONAL
SECTIONAL TABLES
with SWING SEATS



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Seats Swing Under Table — Out of Way!

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MAXIMUM SEATING CAPACITY IN LIMITED SPACE!

Colorful tops and wide range of enamel paint finishes add attractive new color to industrial and institutional dining rooms and recreation rooms. Units in varying lengths seat 4 to 24 people. Attached seats (with or without backs) swing under table to eliminate crowding, noise and confusion of loose chairs and tables. Ideal for industry, schools, hospitals and institutions.

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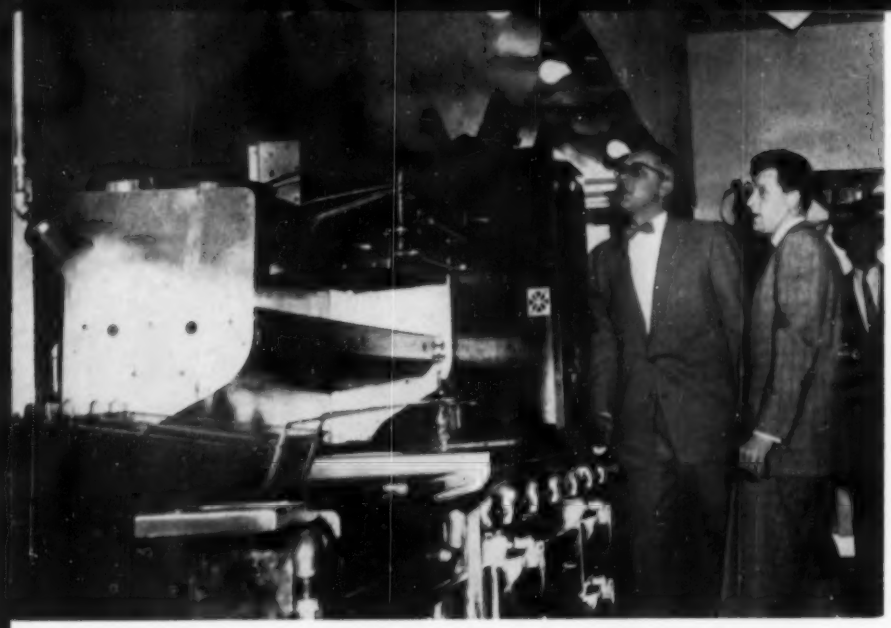


Here carbon dioxide is being discharged from nozzles mounted in the range area's exhaust hood. Shortly afterward fire-smothering inert gas began work in area and ducts.

PRESSURE OPERATED EXTINGUISHING SYSTEMS

A new, pressure-operated, carbon dioxide fire extinguishing system has been developed featuring an entirely self-contained design. The highly flexible system operates on a rate-of-temperature-rise principle and employs carbon dioxide under pressure of 850 psi both for its power and as its fire extinguishing agent. This means that the apparatus is wholly self-contained and requires no outside power source.

If a fire occurs in a Class B or C hazard (flammable liquid or electrical equipment), the rapidly rising heat increases air pressure within one or more small heat actuators mounted throughout the hazard area. This increased pressure is transmitted through small diameter copper tubing to master pneumatic control heads mounted on two of the carbon dioxide storage cylinders. This impulse triggers the control heads thus releasing the pressurized carbon dioxide in these two cylinders. This gas rushes from its containers and enters manifold piping to which other carbon dioxide cylinders are connected and opens the pressure-operated valves of these other cylinders releasing their gas. The total charge then is routed through piping to the fire area where it discharges from nozzles. A sufficient volume of carbon dioxide is introduced to reduce oxygen from a normal concentration of 21 percent to something under 15 percent. This is insufficient oxygen to support combustion and the blaze is smothered immediately.

By means of easily added devices this basic system can be adapted to answer special problems concerned with the protection of virtually any Class B or C hazard. Pressure-operated switches and trips, automatically actuated by the passage of carbon dioxide through the piping, will close vents, dampers, windows and shut off machinery, etc. Others cause alarms to sound in one or more locations while another pneumatic device delays discharge of the gas for approximately 30 seconds. Manual release pull boxes also can be located as desired.

The addition of pneumatically-operated directional valves permits one basic set of cylinders to stand automatic guard over a number of hazard spaces even though each requires a different volume of carbon dioxide. With this type of installation, the equipment automatically detects the fire, selects the number of carbon dioxide cylinders needed, actuates them, and routes the fire smothering agent to the "in trouble" area only.

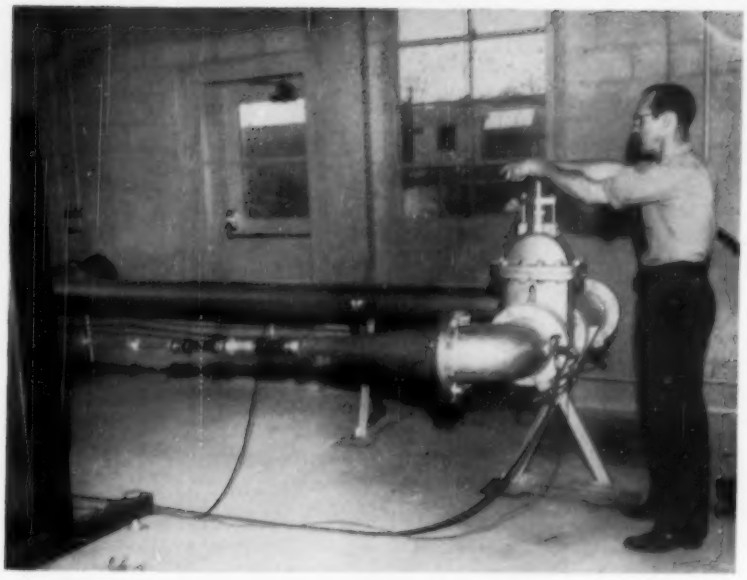
The new design eliminates falling weights which previously operated levers to open cylinder valves. A simplified cylinder racking arrangement with an attached cylinder weighing bar permits the banks of cylinders to be free standing or wall mounted and no wire mesh protective screening is needed to prevent accidental discharge.

Every pneumatic control head has an indicator which at a glance tells whether the system is ready for action or has been discharged. The head can be reset with a screw driver.

Another interesting feature permits testing of all parts of the system at will without discharging the cylinders. After unscrewing the union joints between the cylinder valves and control heads, the application of heat to any heat actuator (or pulling a manual actuating control) will test every pneumatic and mechanical part of the system.

Pictures by courtesy of Water Kidde & Co., Inc.

New cylinder weighing equipment for carbon dioxide systems offers several advantages.



It is through the apperatus, shown in part in the above picture, that the flow of fuel at the new testing laboratory at Wright Air Development Center, Dayton, Ohio, is controlled.

An interior of the new laboratory which has, among its protective devices, a spark-proof floor, double duty heating-ventilating system.

Safer Fuel-Test Building

A new fuel test laboratory building which will provide for greater safety and efficiency in the testing of fuels for the Air Force has been completed at the Wright Air Development Center, Dayton, Ohio, for the Air Research Development Command.

The structure is 22 by 38 feet long and 18½ feet high. Engineers at WADC said the building will be used to test new and improved aircraft fuels and will contain 12 safety features designed to prevent explosions, fires and injuries to personnel.

The safety measures include a new spark-proof floor, a floor drain that empties into a 2,000-gallon tank which can be pumped out periodically and its contents destroyed, explosion-proof electrical equipment sheathed in heavy steel, a double-duty heating and ventilating system for quick changing of air; and a concrete sealer to coat the concrete blocks in the walls and stop vapor fumes from collecting inside the blocks.

Other safety devices are a foam fire extinguisher system, a fire hose that can be swiftly unreeled, scored windows to let the glass buckle out from any blast, explosion hatches on the window frames to swing them outward in case of an explosion, and a light concrete slab roof that will blow off and reduce extensive damage to walls.

Building specifications include a separate observation room which will allow personnel to witness action in the test building through two panes of bullet-proof glass; one is two inches thick and the other three-quarter-inch thick.

Additional safety features are doors with panic latches to permit quick opening, and a 2,500-pound air operated hoist for moving heavy tanks, valves and other equipment used in the tests.

Twelve safety features, designed to prevent explosions, fires and injuries to personnel, are included in this new fuel test building.

On leaving building when fire breaks out, the final act is to start extinguishing system.

Motor Fleet Courses

The National Committee for Motor Fleet Supervisor Training has announced the following series of courses. Further details can be obtained from the Institute of Public Safety, The Pennsylvania State University, University Park, Pa.

FLEET SUPERVISOR COURSES

June	18–22	Northwestern University–Evanston
	18–22	University of Virginia–Charlottesville
August	20–24	University of Louisville–Kentucky Motor Transport Association–Sponsor
September	10–14	The Pennsylvania State University
	17–21	Purdue University–Lafayette
October	1–5	University of Toronto–Canada
	15–19	University of Minnesota–Minneapolis

TRAINERS OF COMMERCIAL DRIVERS

July 30–August 3 University of Kansas–Lawrence

EFFICIENT TERMINAL MANAGEMENT

September 17–21 The Pennsylvania State University

TOP MANAGEMENT CONFERENCE

September 27–28 The Pennsylvania State University

MAINTENANCE COURSES

October	1–5	Rutgers University–New Brunswick
	8–12	University of Alabama–University
	15–19	Northeastern University–Boston

Safety Sets Style

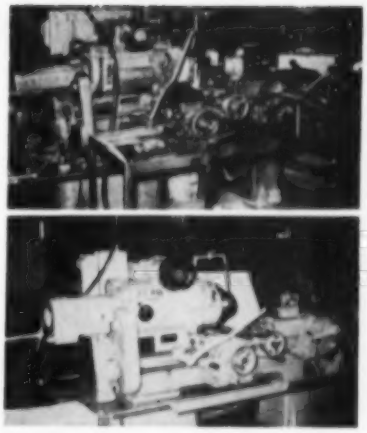
Glass derbies and chesty inflated vests are the safety style in Anchorage, Alaska. The derbies are hard hats made of non-shatterable fibre glass. The vests are cellular rubber, roundly inflated. They are part of the continuous crusade of the Alaska District Corps of Engineers to protect the health and lives of men who work on defense construction.

In fact, Col. Carl Y. Farrell, Alaska District Engineer, has issued a directive that "government and contractor personnel shall wear proper protective headgear, hard hats, on construction operations where there is exposure to falling or flying objects."

Hard hat areas, with warning signs, are being established where there is work on trench excavation more than 6 feet deep, batch and gravel plants, loading operations and around cranes and hoisting machinery.

The vests are a new type of life preserver, inflated and made of cellular rubber, worn over outer garments. Inflated they have sufficient buoyancy to keep the wearer afloat until rescuers arrive. The safety rules require these vests shall be worn by all government and contractor employees working on floating pipeline, pontoons, float stages, open deck floating plants, structures over or adjacent to water except where proper guardrails or safety belts or lifelines are provided; in skiffs, small boats or launches except when inside enclosed cabin or cockpit.

The life belts will be worn this summer on the Alaska District's civil works projects, enlarging and dredging harbors and small boat basins. These hard hats and vests may not be glamorous–but they do mean safety and perhaps life itself.



Color Boosts Safety, Production, Morale

Color dynamic painting of selected power machines, particularly lathes and other metal working machines, has lessened eye fatigue of workers, improved production, boosted morale, and reduced the injury hazard at Walter Kidde & Company, Inc., (Belleville, N. J.) according to Valentine Hill, vice president. He states that it is also an important incentive for good housekeeping.

"Vista Green" enamel is used on the body of the machine. This has a receding effect on the body of the machine and only the working and moving parts stand out.

"Focal Ivory" provides good light reflection where it is most needed. It has a light reflection value of 74 percent and applied to the beds and splash pans and shields of the machines it gives clear dimension to work of either ferrous or non-ferrous metal.

"Focal Orange" is used on all of the ON-OFF switches, machine guards, crushing or cutting edges, and electrical boxes. This application makes these parts stand out and be apparent to anyone approaching the machine.

A comparison of the new color scheme (bottom picture) to the old dark gray paint (top picture) on all parts of the machine shows the merits of color dynamics. The reflective value of dark gray paint after it has been applied for a short while is about 5 percent. Ten feet away from such a machine hardly any controls are visible.

Pictures by courtesy of Walter Kidde & Co., Inc.

inside the trade

H. W. HEINRICH, Superintendent of the engineering and loss control division of The Travelers Insurance Companies, and one of the best known safety engineers in America, has retired after more than 43 years' service with the insurance firm.

He is a registered professional engineer (mechanical) in Connecticut and holds a designation as a chief engineer, Marine, from the U. S. Department of Commerce. Mr. Heinrich is also a boiler and elevator inspector in several states.

Mr. Heinrich is a member of the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, the American Society of Sanitary Engineers, the Hartford Engineers Club, the President's Conference on Industrial Safety, the liaison committee on Safety of the Associated General Contractors of America, and is active in committee work for the American Standards Association.

An internationally known authority on safety, Mr. Heinrich is the author of several books, manuals and magazine articles. He has written "Industrial Accident Prevention," "The Supervisor's Safety Manual," "Basics of Supervision," and "Formula for Supervision."

In his extensive research, Mr. Heinrich has developed a ratio of direct to hidden cost of accidents, and accident sequence, a ratio of major to minor injuries, causes of accidents, an accident cause code, a boiler and machinery cause code, a subject outline and teaching methods for accident prevention and supervision and an analogy in supervisory control methods for safety and production.

Effective June 1, Mr. Heinrich will serve as president and chairman of a non-profit organization which promotes the uniformity of laws governing the safe construction, installation and operations of steam boilers and pressure vessels in United States and Canada.

R. L. Weir, Vice President, *The General Detroit Company* was elected president of the *FIRE EQUIPMENT MANUFACTURERS' ASSOCIATION* at the Association's Annual Meeting in New York City.

Other officers elected included *W. E. Morgan, Jr.*, Industrial Sales Manager, *Walter Kidde & Company*, First Vice President; *A. D. Symonds*, Treasurer, *W. D. Allen Co.*, Second Vice President; and *Paul Nurkiewicz*, Vice President, *Stop-Fire, Inc.*, Treasurer. *Hanson & Shea, Inc.*, Pittsburgh, Pennsylvania, was again retained as Commissioner for the Association.

In announcing the Fire Equipment Manufacturers' Association plans for 1956 Mr. Weir outlined plans for an industry program which includes statistics, sales and marketing, and a broader public relations program.

Member companies of FEMA include: W. D. Allen Manufacturing Company, American LaFrance Corporation, Ansul Chemical Company, Badger Fire Extinguisher Company, Elkhart Brass Manufacturing Company, The Fyr-Fyter Company, The General Detroit Corporation, Walter Kidde & Company, Miller-Peerless Manufacturing Company, The Phister Manufacturing Company, Pyrene-C-O-Two, The Safety Fire Extinguisher Company, Safety First Products Corporation, and Stop-Fire, Inc.

PITTSBURGH PLATE GLASS COMPANY'S Fiber Glass Division has announced the appointment of *Robert A. McLaughlin* as general manager. Prior to his appointment, Mr. McLaughlin had served as director of sales since 1952 when the Fiber Glass Division was formed.

Appointment of *Henry A. Solie* as sales manager for *Barreled Sunlight Paint Company* has been announced by Fred McCarthy, Vice President of sales. Barreled Sunlight was purchased last year by Pittsburgh Plate Glass Company as a wholly-owned subsidiary. Mr. Solie had served as assistant general sales manager during the past two years and has been associated with Barreled Sunlight since 1946.

LEON D. HOROWITZ, for nine years connected with the Division of Industrial Hygiene of the New York State Department of Labor, has opened his own office at 100 Park Avenue, New York, N. Y. where he will serve as a Consultant in the field of dust and air pollution control, industrial hygiene, noise surveys and exhaust system design.

During his tenure of service with the New York State Labor Department, Mr. Horowitz was in demand as an expert speaker and writer on various phases of industrial hygiene and his articles have appeared in *SAFETY MAINTENANCE*.

Al. W. Roth has been appointed Manager of the new Large Propeller Division of *AEROVENT FAN COMPANY, INC.* Mr. Roth has served in a sales engineering capacity for the company throughout the Southwest and will continue to maintain

SAFETY FACTS for Industry
Safe-Hi LADDER CLIMBERS
FOR CLIMBING & WORKING
ON ALL LADDERS WITH
NEW SAFETY
THIS NEED NOT HAPPEN!
WORKING WITH Safe-Hi LADDER CLIMBERS IS EASY, NATURAL AND SAFE! SAFER THAN POSSESSING 4 ARMS!
A WORKMAN CAN CLIMB LADDERS WITH CONTINUOUS SAFETY... PROVIDES VITAL SAFETY AND EFFICIENCY AT LOW COST! IDEAL FOR CLIMBING FIXED LADDERS (ON TOWERS, SMOKESTACKS, ETC.) DOES NOT IMPEDE CLIMBING!
* NEXT TO HANDLING OBJECTS FALLS ARE THE PRINCIPLE SOURCE OF WORK INJURIES! FALLS ACCOUNT FOR 17% OF ALL DISABLING INJURIES... 19% OF FATAL & PERMANENT TOTAL INJURIES... 14% OF PERMANENT PARTIAL INJURIES, & 18% OF TEMPORARY TOTAL INJURIES.
* FROM "ACCIDENT FACTS," 1955 EDITION
HAND PRESSURE RELEASED
LATCH RELEASED
METAL GRIP
LIGHT SQUEEZE OF HAND RETRACTS LATCH AND OPENS METAL GRIP
ROSE MANUFACTURING CO.
2700 W. BARBERRY PLACE
DENVER 4, COLORADO
Safe-Hi
DENVER
(For details, use Key # S-28 on card on page 37)

offices in the Wright Building at Tulsa, Oklahoma and at Piqua, Ohio, site of the main office and factory of the parent organization.

A new label design featuring a diamond motif has been introduced by the *RAY-O-VAC COMPANY* for its entire line of radio batteries. The new label will retain the present well-known colors, red, yellow, blue and white to increase quick, positive identification of the product. The Ray-O-Vac radio battery line will use the NEDA (National Electronic Distributors Association) numbering system.

The Building Products Division of *L. SONNEBORN SONS, INC.* has opened a new Canadian plant and sales headquarters for its line of building maintenance and construction materials.

According to the announcement, Sonneborn Ltd., recently-formed Canadian subsidiary of the 50-year old Sonneborn organization, has begun operations in a 40,000 square foot Toronto plant which will turn out admixtures which increase impermeability and ultimate strength of concrete; air-entraining agents for concrete surfaces; water repellent coatings for concrete, brick and masonry surfaces; hardening agents for concrete floors; and a variety of other products used in construction and maintenance.

THE CAMBRIDGE WIRE CLOTH CO., Cambridge, Maryland, is announcing the appointment of the Green-Penny Company, Oakland, Calif. and Robert Abel Co., Inc., of Brookline, Mass. as new Selective Distributors for its line of Gripper Woven Wire Slings.

Many of the latest innovations in materials handling equipment and techniques in hoists, cranes, chains and wire rope will be unveiled and demonstrated by the *AMERICAN CHAIN & CABLE COMPANY, INC.*, at the 1956 MHI Exposition to be staged at the Cleveland Public Auditorium, Cleveland, Ohio, June 5–8.

Interest at the American Chain Division's exhibit will be centered around the Company's line of Acco Registered Chain Slings, the popular X-Weld Chain and the new Shaped Section Master Link, the newest innovation, which has been designed for utilization with industrial chain and wire rope slings.

The Wright Hoist Division will demonstrate one of its newest contributions to efficient materials handling—the electric underhung motor-driven crane, featuring flangeless wheels. Other Wright developments include a top-running motor-driven crane with end trucks designed for easy maintenance; a small 1⅛ ton capacity Pull-A-Way hand hoist for consumer and industrial applications; a wide variety of hand-operated chain hoists; and the new 2-speed Electric Hoist with a normal lifting speed and slower spotting speed.

A complete display of Acco Registered Wire Rope Slings with Dualoc safety endings, including the flexible Cable-Laid Slings, will feature the Wire Rope Sling Department display. Visitors will be able to test its handling features for themselves.

THE ELWELL-PARKER ELECTRIC COMPANY, Cleveland, Ohio this year celebrates its 50th anniversary of industrial truck production.

The company, which was originally founded in 1893, produced the first industrial truck in 1906. Prior to that time, the firm was engaged in the design and manufacture of electric motors and generators used on overhead cranes and electric automobiles.

The first truck, which was developed for the Pennsylvania Railroad, consisted of an ordinary hand-drawn baggage truck with batteries and motor beneath the deck. The controls and steering mechanism were so arranged that the operator walked in front.

In the years that have followed, the company has pioneered hundreds of platform, lift and fork trucks as well as specially designed models engineered to solve specific materials handling problems.

Today, Elwell-Parker is headed by *Sheldon K. Towson*, son of the founder, and has 500 employees, while its sales representatives cover 48 states and 30 foreign countries.

Safety and Special Purpose
Plain or Reflectorized
SIGNS for EVERY NEED!
SAFETY FIRST — BE — CAREFUL
NOTICE THESE DOORS MUST BE KEPT CLOSED
THINK ACCIDENTS ARE AVOIDABLE FORGET THE ALIBI
BE CAREFUL SAVE A LIFE IT MAY BE YOUR OWN
HELP KEEP THIS PLACE CLEAN
EXIT
DANGER — NO — SMOKING
WARNING CURRENT — ON —
CAUTION KEEP AISLES CLEAR
NO PARKING AT ANY TIME
EXPLOSIVES
SLOW
SHELTER AREA S INSIDE
STOP
MEN WORKING
SARGENT 1200 E.
SOWELL ST.
No matter what your sign requirements may be, you can depend on Sargent-Sowell! We are nationally known for our dependability and quality, and we maintain a complete inventory of more than 5,700 standard Industrial, Construction, Safety, Municipal, and Plastic signs.
All orders are processed the day they are received . . . no waiting! You get your signs when you want them.
What's more, you'll find our prices represent genuine savings. Write for our new full color illustrated folder today.
Immediate Delivery!
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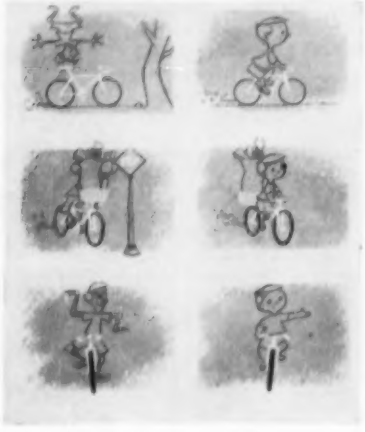
"Satisfaction Guaranteed or Your Money Refunded"
P. O. Box 1176
Grand Prairie, Texas
(For details, use Key # 5-29 on card on page 37)

←
Only fools play with matches instead of keeping them safely where they belong.

Closets filled with rags, papers and junk can cause spontaneous combustion.

There are wrong places as well as right places to build your outdoor campfires.



→
Any "show-off" is doomed to failure. Ride your bike properly instead of like a fool.

Vision must not be impaired. If you are carrying loads, stack them behind you.

Only fools give wrong arm signals. Your arm signals should be the same as auto drivers'.

© Walt Disney Productions

New Disney Safety Films

Recognizing the tremendous need for safety films designed for younger children, Walt Disney has released two such films in 16mm sound, full animation and Technicolor.

The two subjects deal with bicycle and fire safety and are titled "I'm No Fool with a Bicycle" and "I'm No Fool with Fire." Each film runs 8 minutes.

Both represent a fresh, amusing and effective approach to serious problems; as might be expected when Walt Disney turns his talents to safety education.

Jiminy Cricket, long famed as Pinocchio's conscience, serves as an engaging master of ceremonies and teacher. In both films Jiminy traces the history of his subject and then with rare skill takes up the safety rules which apply. To further make his points he conducts a contest between a Common Ordinary Fool and Y-O-U. The winner is duly proclaimed and Jiminy presents the badge of intelligence.

Throughout both films Jiminy sings and dances to the catchy melody of "I'm No Fool," changing the lyrics to fit the problem at hand.

Walt Disney has made excellent use of animation, color, humor and music to teach well—but equally important—to entertain as he teaches.

Both films are available under the Disney long-term lease plan to all educational film libraries and industrial organizations. Full information is available through 16mm Division, Walt Disney Productions, Burbank, California, or Walt Disney Productions, 16mm Division, 477 Madison Avenue, New York 22, New York.

Floor Care Film

One of the most comprehensive films on the subject of floor maintenance has been produced by the Walter G. Legge Company, Inc. In color as well as sound, the 16 millimeter motion picture has a running time of 15 minutes.

Titled "Modern Floor Maintenance," the film demonstrates right and wrong methods of cleaning and polishing floors. Daily touch-up maintenance and many of its common problems are covered pictorially as well as in narration. Interesting sidelights include the care and handling of equipment and simple rules for safety. Designed to aid administrative executives in the training of cleaning crews, the film is now available for showings by Legge representatives in principal cities. Companies wishing to arrange for a showing are requested to contact C. V. Starrantino, Vice President, Walter G. Legge Company, Inc., 101 Park Avenue, New York 17, N. Y.

The Industrial Nurse

A 35 mm color sound film, "Opportunities of the Industrial Nurse," is available from the Massachusetts Industrial Nurses' Association. The film and narrative describe the work of the graduate nurse as a member of the professional health and accident team of physician, nurse, safety engineer, and industrial hygienist or chemist.

The film has a running time of 20 minutes. There is a nominal charge of from $2 to $2.50 to cover the cost of packing and mailing. Groups or individuals interested in borrowing the film should contact: Koletta K. Kaspar, R.N., Esso Standard Oil Co., Everett, Mass.

Material appearing in this section is published as information and is not intended to imply endorsement or guarantee by SAFETY MAINTENANCE.

To obtain descriptive literature of products listed, use Reader's Inquiry Card. Write in code number given each item. Send written requests to: Service Dept., SAFETY MAINTENANCE.

what's new for JUNE

Safety Ribs—containing diamond-hard abrasive grit—provides positive anti-slip protection.
Aluminum construction won't corrode—won't rust.
Red stopping line for extra safety.
1½ in. lip covers and protects face of stair tread.
1 in. tapered beveled back
⅝ in. beveled ends.

COLORED-EDGE STAIR TREADS

(Use Key # 838 on Inquiry Card on page 37)

WOOSTER PRODUCTS INC. has announced the development of stair treads featuring double red lines at the safety tread edge, making the stairs safer by outlining the limits of the step. The new visibility line is furnished on the extruded aluminum Stairmaster stair tread.

The tread itself comes in a standard nine-inch width with anti-slip abrasive grit filler locked in "V" shaped grooves. Available in lengths as required, the treads are easily applied over any type of stair using screws or combinations screws and lead expansion shields. Leveling compound for filling in and leveling worn steps before the treads are applied can be furnished by the manufacturer. The treads are said to be of particular value to persons with impaired vision or those wearing bifocal glasses. They are designed for all types of traffic, and are suited for commercial buildings, manufacturing concerns, etc.

NEW LINES OF TUBE COLORANT PAINTS

(Use Key # 839 on Inquiry Card on page 37)

THE ADDITION of three new exterior house paints and an interior gloss enamel that employ tinting bases and universal tube colorants, has been announced by Pittsburgh Plate Glass Company. An addition to the company's Maestro Colors, the new paints will provide 101 popular colors in exterior finishes of all types and 300 colors in interior paints and enamels.

The four new products being introduced in tube colors are: sun-proof house paint for body work—An oil base product which will be available in both gallons and quarts in 101 colors; sun-proof house paint for trim work—An alkyd resin product for both wood and metal which will also be available in 101 colors; shake and shingle paint—Flat finishes in 101 colors for use on shingles, shakes and other wood surfaces where a flat sheen is desired; wallhide glass enamel—A high gloss enamel for use on interior walls and trim that will be available in the 300 decorator colors.

NEW FLUORESCENT LAMP

(Use Key # 840 on Inquiry Card on page 37)

A NEW fluorescent lamp, said to have double the light output of present tubes of equal length, has been developed by the General Electric Company. The increased light is made possible by a change in tube design. It features a series of lengthwise dents or grooves along one side of the eight-foot-long fluorescent tube. Because of its high light output and unique appearance, the new lamp has been named Power-Groove.

At the grooves, the new tube is nearly U-shaped in cross-section. This design is said to permit a maximum circumference of the tube while constricting its inside area. The greater light output results from an increase in area of the lighted tube surface, the higher wattage at which the new tube can be operated, and the more effective use of energy within the tube. According to the manufacturer, the scientific principle involved is to diminish the internal loss of energy before it can be turned into visible light. The loss is caused largely by absorption in the mercury vapor within the lamp. The grooves constrict the area within the bulb, and since the radiation has less distance to travel, more of it survives to activate the phosphor and create visible light. The "rapid start" principle is being used in these lamps so that they will be essentially instant starting and have ballast equipment of minimum size. New ballasts have been designed for the Power-Groove, and new fixtures will have to be designed to accommodate the new lamp. It will be used in new installations, and not for replacements in existing fixtures. Basic length of the Power-Groove will be eight feet, but four-foot lamps will be available to fill in where necessary. The lamp is two and one-eighth inches in diameter and is rated at about 200 watts.

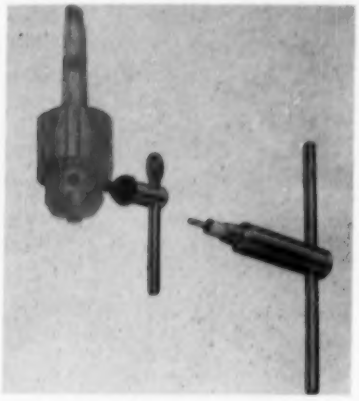
PROTECTIVE SKIN CREAM

(Use Key # 841 on Inquiry Card on page 37)

SOLUCONE, a new, heavy-duty, protective skin cream, has been introduced by Soluol Laboratories, Inc. It contains silicone (dimethylpolysiloxane) as the protective agent, in an effective vanishing base. When applied, the cream maintains a barrier that prevents skin contact with external irritants known to cause dermatitis, skin rash, skin drying and cracking.

The cream is said to be equally effective for wet or dry work and to retain its protective powers even when skin is immersed in liquids for long periods. It will protect the skin from irritations caused by most acids and chemicals. When chemical applications are accompanied by steam, the cream will wear off more readily, but will

afford protection if applied more frequently. The barrier prevents perspiration from coming in contact with the work, and keeps hands fresh and clean. Dyestuffs wash off easily, leaving no skin discoloration. According to the manufacturer, in cases where skin disorders have already occurred, the cream will prevent spreading and speed recovery. It does not smear, and will not affect materials handled.



SAFETY CHUCK KEYS & WRENCHES

(Use Key # 842 on Inquiry Card on page 37)

SAFETY chuck keys and wrenches that eliminate the danger of "flying keys and wrenches" have been introduced by the Lindstrom Mfg. Co., Inc. Self-ejecting, the devices make it impossible for an operator to leave a key or wrench in the chuck. When hand pressure is released, the key automatically ejects itself.

The keys and wrenches are designed to fit all Jacobs and Supreme key-operated chucks. Made from cold rolled steel, they are heat-treated and plated to resist corrosion.

ACID-RESISTANT GLOVES

(Use Key # 843 on Inquiry Card on page 37)

THE development of a new industrial glove, made of Butyl rubber to protect hands from the most destructive acids, has been announced by the Glove Division, Hood Rubber Company.

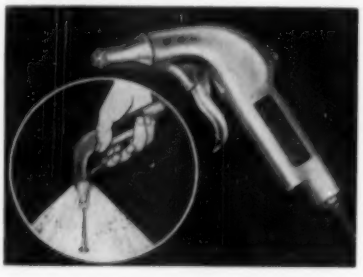
This glove is made of an exclusive Butyl rubber compound that is said to be non-absorbing. It resists such destructive agents as sulphuric, nitric and phosphoric acids, oxygen, ozone, oils, salts and many others. The company reports testing this new glove under actual working conditions, with excellent results, in the plant of one of the largest chemical manufacturers in the world. The glove is a one-fingered model, seam and crotch reinforced. It is light green in color and has a rough, stippled finish to provide a non-slip grip.

GAS LEAK PROBE TOOL

(Use Key # 844 on Inquiry Card on page 37)

ENGINEERS Tool Company has made available a gas leak probe that is said to speed and simplify probing for gas leaks with safety. Designated the M-pact-O Probe, it is to be used with explosion test meters. Its impaction feature eliminates hammering with a heavy sledge, saving bruised knuckles and broken hands. Reciprocating motion of the weighted handle operates the tool.

The probe will penetrate to a depth of 40 inches. Spark resistant probes, and probes for deeper penetration are also available. The M-pact-O gas leak probe will penetrate six inches of asphalt, according to the manufacturer.



SAFETY AIR GUN

(Use Key # 845 on Inquiry Card on page 37)

A SAFETY air gun which provides a protective umbrella of high pressure air has been announced by the Union Engineering Corp. Called the Guardair, this new air gun utilizes a principle by means of which an air stream is diverted through fluted passages to set up a conical shield of high pressure air which helps prevent chip "flyback". This protective screen operates simultaneously with the air jet so that the gun cannot be used without the safety feature.

The air gun itself is a comfortable pistol type designed to fit the hand and prevent irritation and operator fatigue. Air release is trigger actuated. Also incorporated in the Guardair is an adjustable knurled stop nut which controls the output of air, and allows repetitive use at controlled pressures. The air gun fits standard air lines. Air seepage and bleeding is eliminated by a leak-proof valve which is an integral part of the gun. Made of burnished cast aluminum with a solid brass tip.

SLUDGE REDUCING BACTERIA

(Use Key # 846 on Inquiry Card on page 37)

A NEW bacterial discovery has been announced by the FX-Lab Company. Known as Formula FX-21, it reduces sludge withdrawals in municipal sewage treatment plants by means of reproductive, spore-bearing organisms. It is said that the cultures will survive even under such adverse conditions as low temperature and low pH.

The manufacturer claims that recent tests indicated a reduction in sludge withdrawals of 80 percent, thereby in effect, increasing the capacity of digestion tank facilities approximately five times. At New Milford, N. J., where the tests were conducted, the first five months of the test period were used for controlled testing in which one digestion tank was treated with bacteriological cultures and the other left untreated. 7,760 cu. ft. of sludge were withdrawn from the tank supplied with FX-21 cultures, while a total of 19,640 cu. ft. of sludge was withdrawn from the untreated tank. When both tanks were treated with the cultures during the second period of 5½ months, and the results compared with those of the previous year, the total amount of sludge withdrawn was 10,000 cu. ft., compared with 65,000 cu. ft. during the same period of the previous year.

TONGS FOR SMALL OBJECTS

(Use Key # 847 on Inquiry Card on page 37)

A SMALLER edition of the mechanical manipulator used around atomic reactors and laboratories has been announced by the Atomic Center, Inc. Called "Niptongs", it is designed to grasp and release small radioactive or otherwise dangerous objects at a safe distance from the hands.

The sturdy tongs consist of an insulated handle, stationary arm, and spring-loaded, movable arm. Right angle bends at the ends of the two arms act as fingers. They are normally held firmly closed by spring pressure and are easily separated by squeeze-to-release, one hand action.

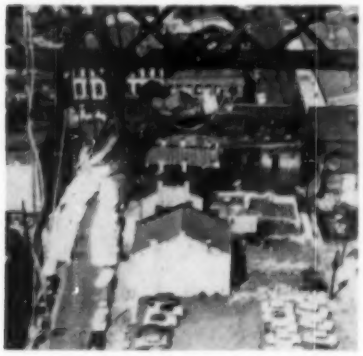
Niptongs are for use in metal shops for handling small parts being heat-treated, and in chemical laboratories for safe carrying of test tubes and beakers of corrosive acids and for removing crucibles from baking ovens, as well as in radio-isotope laboratories in connection with radioactive materials. Additional uses are in food handling processes, in assembling operations for retrieving of small parts, and in many other applications where prevention of bodily contact, or extension of reach is desired. Niptongs are available in 12, 24, 36, and 48 inch lengths.

DRY-MIST SPRAY PAINT

(Use Key # 848 on Inquiry Card on page 37)

A NEW, dry-mist paint for spraying has been developed by the Phelan-Faust Paint Mfg. Co. Designated Safe-T-Spray, the coatings are said to eliminate costly damage from wet paint mist settling on adjacent surfaces. Because of their quick-dry, dry-mist qualities, the coatings make it possible to spray-paint at any height or in almost any location, regardless of congestion.

The mist, or spray dust from Safe-T-Spray is claimed to be dry enough to wipe or



brush from any object 30 to 40 feet from the spray gun, and 70 to 100 feet in cooler weather. A second coat may be applied after 20 to 45 minutes, thus reducing down-time and re-scaffolding. The fast-drying paint also allows an unusually thick film build to be achieved. The coatings are recommended for towers, grain storage bins and elevators, stacks, chain link fences, and other surfaces where mist damage is a problem.

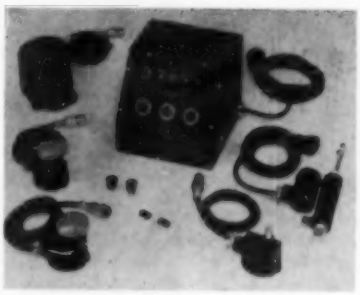
AUTOMATIC POWER PRESS CONTROL

(Use Key # 849 on Inquiry Card on page 37)

THE TRIPPIT, a new electric combination master control, for power presses, shears and brakes, is now available from General Automation Corp. By replacing much of the operator's burden with automatic control, and by permitting him to perform his task with less fatigue and greater safety, the manufacturer claims the device will increase production, eliminate rejects and lessen down-time from jamming or die damage.

For hand-fed and secondary operations, the piece part trips the press automatically. The press will not operate until the piece is properly and accurately nested. A second stroke cannot be obtained until the piece is removed and another blank inserted. Gauging is automatic, rejects are eliminated, pedals are unnecessary, and the point of operation can be guarded more completely than ever before. When the master control is set to repeat, on fully automatic set-ups, the press will stop automatically when jamming occurs or the end of the strip or coil is reached. There is also a provision for automatic shut-off of the press after a pre-set count.

Two-hand safety trips requiring the simultaneous use of both hands are also provided. Actuated by finger-tip pressure, they are of the approved "fail safe—can't



cheat" type. With the Trippit electric foot pedal only a slight operating pressure is necessary rather than the 20 to 50 lbs. force usually needed for a mechanical foot pedal.

110 and 24 volt counters are available. Bell wire to the 24 volt counter socket can be run from each machine to a centralized counter control panel for supervisory purposes. There is also provision for photo electric operation and safety, press overload protection and operation of auxiliary equipment such as slide feeds, etc. The device weighs approximately 20 lbs. with accessories, and measures 7" x 7" x 6½".

FLIP FASTENER SAFETY SHOE

(Use Key # 850 on Inquiry Card on page 37)

THE Iron Age Division of H. Childs & Company has announced their "Flip-Ease" safety oxford, No. 607, which features a patented Talon Shu-Lok fastener. This slide and snap closure, which is adjustable for perfect fit, makes putting on and taking off safety shoes easier and faster. It also enhances the appearance of this number by complementing the lines of plain toe styling.

Other features in this new Iron Age safety oxford include uppers of Cambi-Cordovan leather, thermoplastic counters, Dacron stitching and Pacifate linings. Outsoles are featherweight Neoprene Nitro-crepe.

WARNING FLASHER LIGHT

(Use Key # 851 on Inquiry Card on page 37)

A NEW highway warning device has been introduced by the Davis Emergency Equipment Company. The device makes use of the principle of alternately flashing lights, said to have more attention value than even the brightest single light.

The light is designed to meet the needs of today's mounting highway speeds. Up to now, it was pointed out, emphasis has been on brighter lights operated from batteries. The new device with alternately flashing lights provides greater protection at about half the cost of the high intensity signal, the company asserts. The Wig-Wag Highway Flasher is available for either battery operation, or for 110-volt, AC or DC power line or generator. Plastic magnifying lenses intensify the brilliance of the battery operated units. Also available are single lights with clamps which can be attached to stands or barricades.

REMOTE COOLERS

(Use Key # 852 on Inquiry Card on page 37)

TEMPRITE Products Corporation has announced the introduction of a new series of remote coolers, offering increased capacities and including two entirely new heavy-duty models. Four models feature capacities ranging from 5 to 24 gallons per hour.

Adaptable to all types of cooling systems, it is said the coolers can be used for cooling drinking water in the plant at a savings in floor space by installing on overhead, out-of-the-way wall brackets. Connection can be made to multiple bubblers in busy, heavy work locations. Other commercial-industrial applications include jacket cooling, coolant cooling, welding electrode cooling, and for laboratory experimental work. Units may also be used for cooling light oils, some chemicals, alcohol, etc.

CHEMICAL-RESISTANT GLOVES

(Use Key # 853 on Inquiry Card on page 37)

THE SURETY Rubber Company has announced a new rough-finish coated fabric glove designed to provide a positive grip and withstand oils, acids and solvents.

The coating combines a vinyl base and Surety Sureseal rough finish, affording high resistance to all chemicals as well as resistance to cutting, snagging and abrasion. Fingers are curved for hand comfort and the Surety wing thumb construction eliminates side seams and overcomes tearing out at the thumb. Designated Griptite, the gloves are available with coated palm and knit wrist or fully coated with knit wrist, twelve-inch gauntlet or safety cuff. Women's sizes with coated palms are furnished with knit wrist only.

EMERGENCY LIGHT POWER UNIT

(Use Key # 854 on Inquiry Card on page 37)

AN EMERGENCY light power unit designed for both new and old construction has been announced by the Dynaseal Lighting Corp. Designated the Lifetime DY-1006, its battery is said to be rechargeable 1000 times or more over a period of many years.

Requiring no maintenance or service, it can be permanently installed without concern for the accessibility of the power supply. Its hermetically-sealed battery requires no liquid or refilling. The completely automatic power supply can be conveniently located and permanently wired to remote DY-1000 light assemblies. As many as ten remote assemblies can be connected at distances to 100 feet or more from the power supply. Measuring 11½" x 9" x 9½", the unit weighs only 20 pounds. Its case is designed to protect adequately all working parts, keeping the power unit ready for service should regular A.C. power fail.

DRY PICKUP VACUUM

(Use Key # 855 on Inquiry Card on page 37)

MULTI-CLEAN Products, Inc., has introduced a new light-weight vacuum cleaner for dry pickup. Called the D-110, the unit is highly portable and is powered by a universal type AC/DC, 115 volt, ½ hp motor, which delivers ample power for all vacuum cleaning jobs, the manufacturer reports.

Suction is created by a two-stage turbine which develops a 66-inch water lift at the end of a 1½ inch hose, 8 feet long, with closed orifice. The tank is all-welded steel construction with ½ bushel capacity. Easy on-off latches insure a perfect seal between tank and cover. Latches are unsnapped when tank is to be emptied. The D-110 is equipped with a 30-foot, 18-gauge, 3-conductor cord made of non-marking rubber with molded rubber plug. A strain reliever cushions the cord against sudden pulls and strains. Weighing 29 lbs., the unit rolls freely in any direction on four swivel-type casters. It stands 21¾ inches high, is 14¼ inches in diameter, and is listed by Underwriters' Laboratories.

SOUND METER & ANALYZER

(Use Key # 856 on Inquiry Card on page 37)

A NEW electronic instrument, said to be the first that combines in a single, portable unit four principal functions necessary to measure and analyze noise accurately, has been introduced by Mine Safety Appliances Co. Called the Soundscope, the instrument serves as a meter to measure overall sound levels. It also operates as an analyzer, measuring sound in each of eight octave bands to determine noise peaks. In addition, it can check sounds in narrower frequency bands. Electrical and acoustical calibrators are built into the unit.

To determine whether a noise hazard exists and to locate the sources are the functions of the new Soundscope. Circuits and instrumentation of the unit meet pertinent specifications of the American Standards Association for sound level meters and analyzers. Each of the 14 tubes is mounted on a shock-absorbing pad and the first tube in each amplifier unit is encased in a metal shield. Sub-miniature vacuum tubes are used, along with printed circuits, to reduce the size of the instrument as well as to prolong the service life of the seven dry-cell batteries that supply power. The entire instrument measures 16 inches long, 7¾ inches wide and 7 inches deep. It is enclosed in a wood and aluminum case that serves as a mechanical and electrical shield. All control dials are located on one panel and readings are indicated by a single meter.

When used as a sound level meter, the Soundscope picks up noise through its microphone which literally transforms sound into electrical energy. The sound pressure level is measured by passing the electrical signal through attenuators and amplifiers to the meter. The reading appears on the meter calibrated in decibels (re .0002 microbar). Measurement range is from 24 decibels to 15 decibels. In the analyzer section of the instrument, noise is filtered into any of the eight principal octave bands, from 75 cycles to 19,200 cycles per second. Noise peaks in each of these bands then can be measured individually. For finer analysis, by frequencies within the octave bands, continuously variable filters are used.

FREE FUNGICIDE DISPENSER

(Use Key # 857 on Inquiry Card on page 37)

A NEW installation policy, whereby a Sani-Mister dispenser will be loaned free to industrial plants, and places having public showers, has been announced by Sani-Mist, Inc. The offer is effective with the purchase of a fungicide for the prevention of athlete's foot. Usually, dispensers are rented or sold with the solution.

The fungicide, called Sani-Mist, is a preventive solution for athlete's foot. The dispenser is being loaned free with the purchase of five or more gallons of the solution. Looking somewhat like a bathroom scale, the dispenser is rustproof, and operates by standing on a treadle which releases a fine spray of the fungicide over

the feet and ankles. There is no possibility of water or solution draining back into the closed solution tank. Each user of the dispenser, therefore, receives a fresh, uncontaminated, undiluted spray. With the Sani-Mister, there is no chance for reinfection.

TERRAZZO SEALER

(Use Key # 858 on Inquiry Card on page 37)

TERAZOTONE, a new, quick drying sealer and preservative for terrazzo floors, has been developed by The Penetone Company.

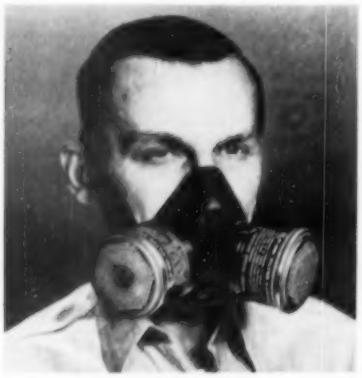
A transparent liquid that actually penetrates the terrazzo and provides a tough, slip-resistant, invisible surface, Terazotone prevents staining, yellowing, pitting and general disintegration of terrazzo caused by wear of traffic and constant use of harsh cleaners. It is said to bring out the rich colors of the marble chips and cement. The liquid comes ready to use and is quickly and easily applied. A thin, even coat, applied with a lambswool applicator, leaves a high lustre on the surface.

HIGHLY ABSORBENT SWEATBANDS

(Use Key # 859 on Inquiry Card on page 37)

COTTON sweatbands that can be used and thrown away, or rinsed and used again, have been introduced by Wagco Products, Inc. Made from "expanded cotton," cotton backed gauze expanded to about eight times its normal thickness, the sweatbands are soft, light in weight, and highly absorbent.

Held across the forehead by means of a rubber band, the sweatband collects excessive perspiration, preventing sweat from running into the eyes, and helps prevent fogging of goggles or spectacles. For use by workers in hot, humid atmospheres, such as foundrymen, welders, etc.



MULTI-PURPOSE RESPIRATORS

(Use Key # 860 on Inquiry Card on page 37)

A NEW group of respirators has been announced by the American Optical Co., Safety Products Div., for operations with combined respiratory hazards. They are additions to its R5000 series.

All four of the respirators protect against inhalation of all nonvolatile airborne particulate matter in the form of dusts, sprays, mists, and fumes. In addition, each respirator gives protection against specific volatile dusts, sprays, mists, and fumes, and also against specific vapors and gases. The R5561 gives added protection against airborne particulate composed of volatile organic substances and against organic vapors. The R5562 also gives protection against acid gases and airborne particulate that decompose or hydrolyze to evolve acid gases. The R5563 protects against inhalation of organic vapors, acid gases, and airborne particulates that decompose or hydrolyze to evolve vapors and gases of an organic and acidic nature. The R5564 protects against inhalation of ammonia and other alkali gases, and volatile airborne particulate that give off alkali gases.

The filter-adsorbent elements employed in the respirators are in the form of cartridges that are rugged in construction and easy to replace. These elements will fit regular AO respirator face pieces.

FIRE ALARM SYSTEM

(Use Key # 861 on Inquiry Card on page 37)

A SUPERVISED fire alarm system, designed for manual or automatic operation in small buildings, has been announced by the Edwards Company, Inc. The alarm can be sounded by single operation of manual stations, or automatic operation of combination fixed-temperature and rate-of-rise detectors.

The alarm is sounded by a continuous ringing of bells or horns which must be distinctive from all other signals. Distinctive vibrating signals are recommended, including flush horns, megaphone horns and grille horns. Manual alarm stations are suitable for mounting on standard 4" or 4 11/16" square boxes with a single gang plaster cover. Overall depth of the die-cast housing is one inch. Tests and fire drills can be conducted without breaking glass. Compact ceiling-mounted automatic alarm stations can be used. They are supplied with 136°F. and 190°F. ratings to meet ambient conditions at the point of installation.

The fire alarm system is operated through a supervisory control panel designed for use on any 115-230 volt, 60 cycle, three-wire source. The panel contains relays, fuses and terminals for alarm station and warning device circuits. A trouble bell, used to warn of accidental shorts or grounds in circuits, is supplied as regular equipment.

VIBRATION MONITOR

(Use Key # 862 on Inquiry Card on page 37)

THE BETA Corporation has announced a new mechanical malfunction detector that can be mounted on most types of rotating equipment to monitor vibration. The device is designed to actuate an alarm or cause shutdown when trouble occurs in the rotating or reciprocating equipment.

Encased in an oiltight housing, with external reset and locking device, the unit can detect malfunctions such as bearing roughness, imbalance, broken blades, bent shafts, etc. Its mechanism is said to require no maintenance, be fail-safe, and not depend on an external source of power. A wide range of internal adjustment of O-2G's provides for a wide range of normal vibration. Contacts are SPDT and rated at 5A, 115-230 V.A.C. resistive or inductive loads.

PLYWOOD FORM PROTECTOR

(Use Key # 863 on Inquiry Card on page 37)

DEVELOPMENT of a new protective finish for plywood forms used in masonry construction has been announced by L. Sonneborn Sons, Inc. Called Form-Saver, the finish is described as a blend of synthetic resins in fast-evaporating solvents. It is free of grease, wax, oil, shellac or varnish, according to the manufacturer.

The chief advantage of the formulation is said to be that it permits clean, smooth stripping of the forms with no pitting of the concrete surface, or transference of raised grain from the forms to the masonry. It is designed to protect and preserve plywood forms against deterioration, and to permit repeated use of the forms without recoating. The finish may be brushed on, or, when the number of forms involved warrants it, applied by dipping. It is claimed that eight to twelve re-uses of a form are possible before recoating is necessary.

WET DUST COLLECTOR

(Use Key # 864 on Inquiry Card on page 37)

FOUNDRYMEN, chemical engineers, metallurgists, plant engineers, safety engineers and those responsible for controlling industrial dusts will be interested in the new Ventrijet wet dust collector manufactured by the Pangborn Corporation. The unit is said to achieve the proper atomizing of water and mixing with the air stream to permit efficient dust transfer by the movement of air without mechanical means.

Dust laden air enters the collector and expands in the inlet chamber at reduced velocity. The heavier particles sink to the bottom of the tank as sludge. The air is drawn through one or more venturi tubes into the discharge chamber. The low pressure area in the venturi throat induces water also to enter the high velocity air stream. The mixing of air and water causes the transfer of dust particles from the air to the water particles. The air, water and sludge mixture impinges at high velocity on special surfaces in the discharge chamber. The sludge settles to the tank bottom. The washed air then flows through an eliminator section for removal of droplets and clean air is discharged. The Ventrijet is available in a range of capacities from approximately 1,000 to 30,000 CFM in single and double row tube types.

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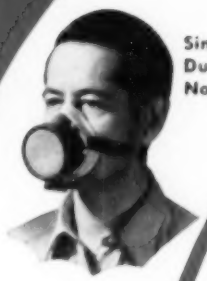

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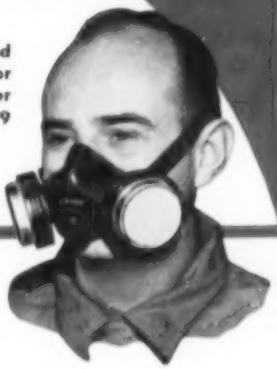
Dust Respirator
No. 80

Approved
Organic Vapor
Respirator
No. 99



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ENTIRELY NEW

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• Here is an entirely new Dual Cartridge Respirator which carries Bureau of Mines approval. It is designed for use in organic vapors or acid gases not exceeding 1/10th of 1 per cent of volume. Twin cartridges, each of which contains 85 cc of efficient absorbent, reduce breathing resistance to a minimum. Rebreathing of exhaled air or the exhausting of used air through the cartridges is prevented by positive-acting inhale and exhale check valves. Cartridges are easily replaced by removing screw-type caps. Valves and headbands are quickly replaced without tools.

A newly designed facepiece, with special attention to nasal contours, provides a snug, leak-proof fit with moderate headband tension. Dual headbands permit proper balance and adjustment for perfect seal along all facial contours.

Contact your nearest CESCO Distributor today for full information and prices on the complete line of respirators to meet every type of industrial requirement.

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Dust Respirator
No. 94

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Light-duty Respirator
No. 81

CESCO FOR SAFETY

(For details, use Key # S-30 on card on page 37)

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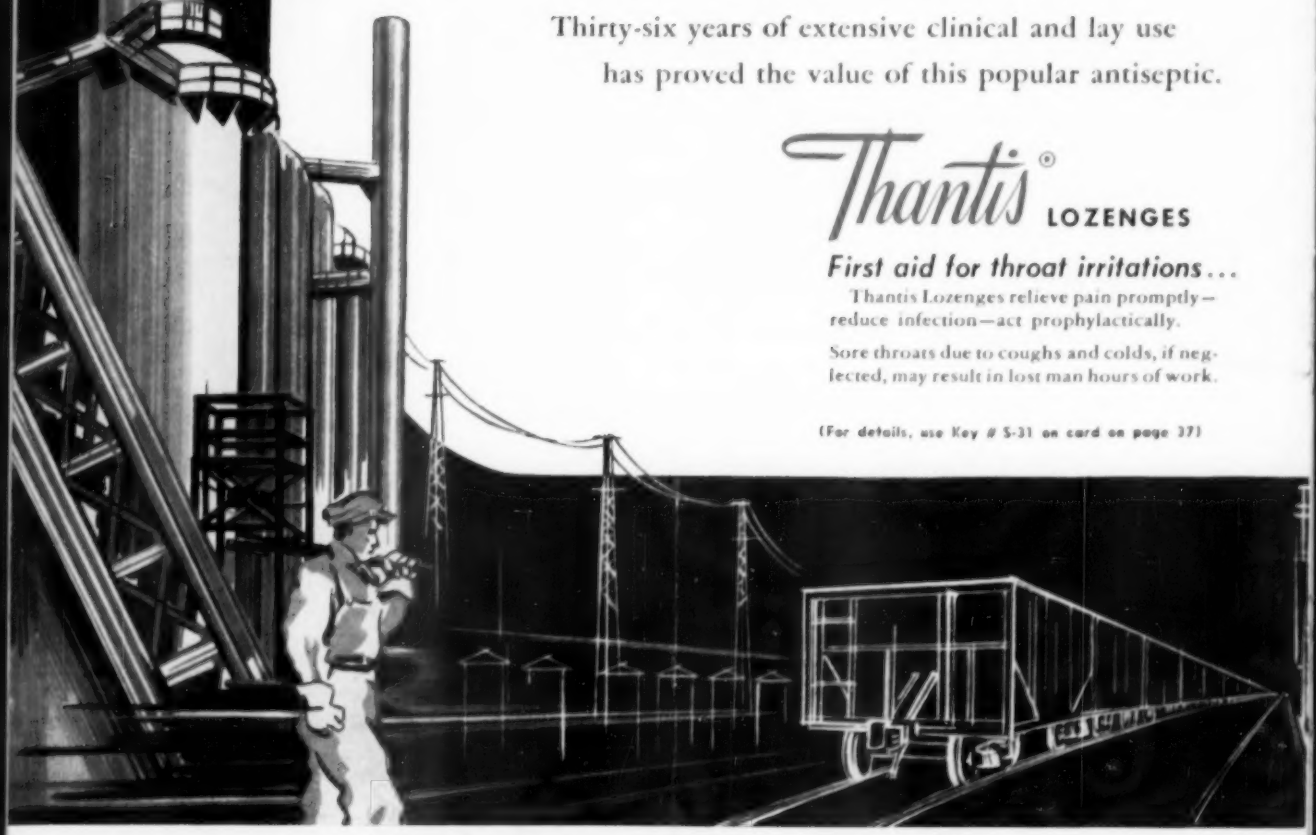
Sore throats due to coughs and colds, if neglected, may result in lost man hours of work.

(For details, use Key # S-31 on card on page 371)



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